the OIL AND GAS JOURNAL

FOR ECONOMY AND LONG LIFE
YOU CAN DEPEND ON A
HUGHES Seal Grip TOOL JOINT"

TEXAS TECHNOLOGICAL
OCT 2 1948
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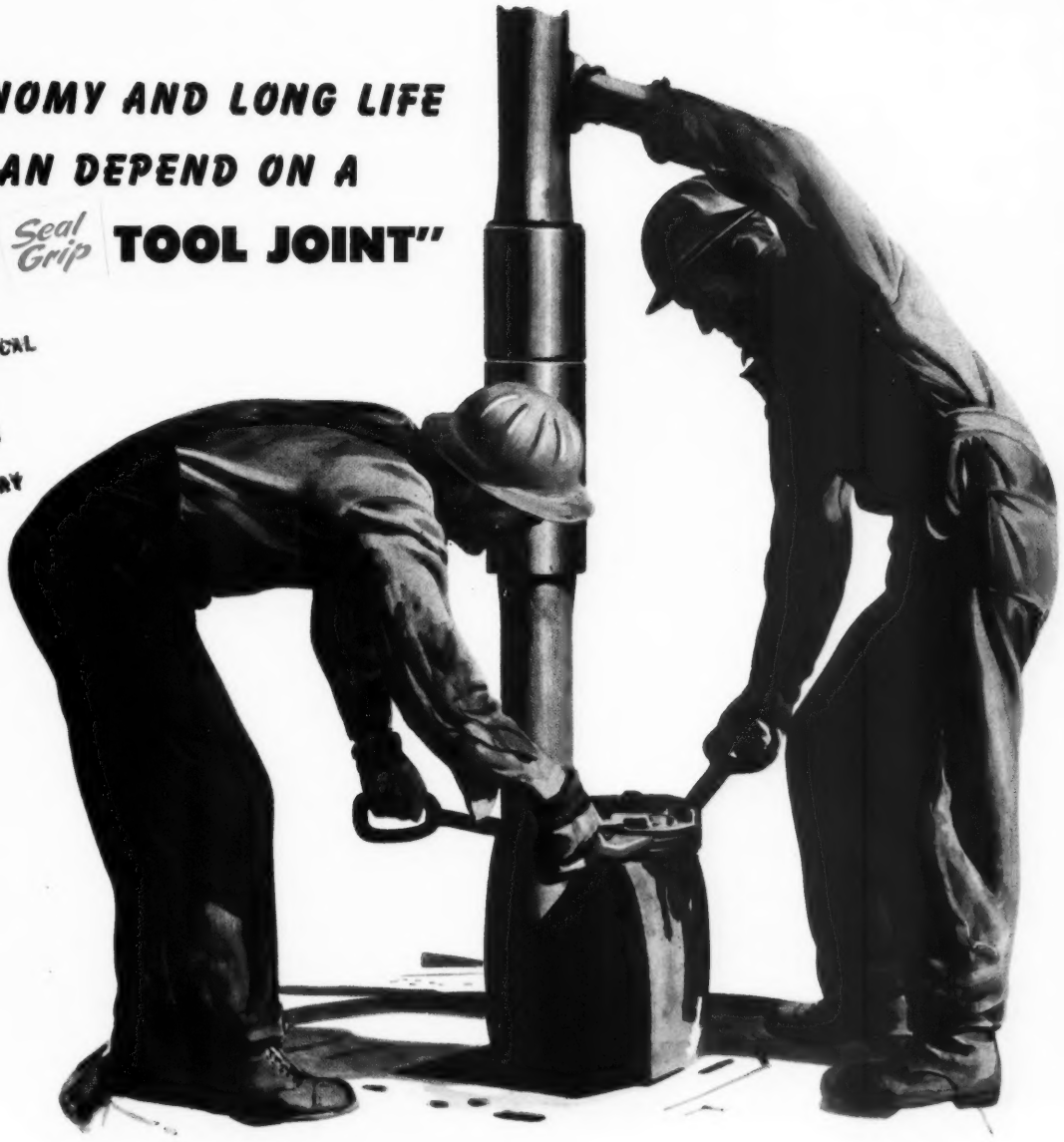


HUGHES TOOL COMPANY HOUSTON, TEXAS
Standard of the Industry

PRICE 20 CENTS TABLE OF CONTENTS PAGE 43 SEPTEMBER 30, 1948

MACNICK CHART CLOCKS AND H

PRECISION MADE OF FINEST MATERIALS FOR LASTING SATISFACTIO

MACNICK CHART CLOCKS

Standard Type, runs eight days with one winding, chart arbor turning once in 24 hours. Converter gears illustrated permit chart rotation speed to be changed without removing clock.

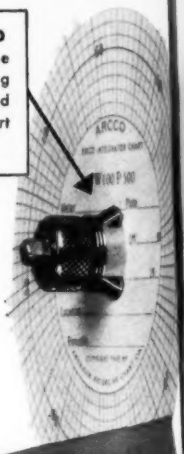
MACNICK *Speed-Lo* CHART HUBS

Never get lost!

THROW AWAY THAT CAP AND CHAIN

—and replace with the new Macnick Speed-Lok chart hub. This capless unit securely locks the chart to the hub, saves time, and there are no parts to lose. It works by simply turning the knurled knob to left and right. Fits practically all tapered arbor chart clocks. Now standard on all Macnick clocks and available for replacement service with other makes.

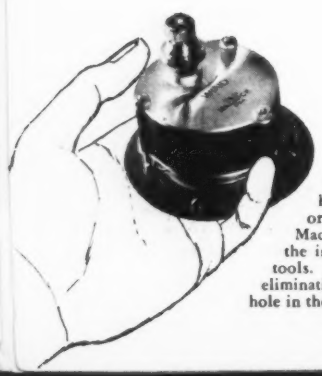
HUB OPEN
Gripping fingers retract permitting chart to be slipped over hub.



HUB CLOSED
Note how the three gripping fingers spread and lock the chart in place.

MACNICK CLOCK *Features...*

- Sustained accuracy, durable construction
- Case hermetically sealed against dirt and dust
- Corrosion-proof case of heavy gauge aluminum
- Heavier parts to minimize breakage and maintenance
- Factory rebuilding and exchange service available
- Adaptable to practically any recording instrument case



THE MACNICK *midget* CHART DRIVE

This clock fills the need for a small size drive in instruments where space is at a premium. It will run 48 hours on one winding. Chart hub turns once every 24 hours and may be either clockwise or counterclockwise rotation. The Macnick Midget snaps into position in the instrument case without the use of tools. It winds through the chart hub eliminating the need for a separate winding hole in the chart plate.

Made By
MACNICK DIVISION
Rockwell Manufacturing Company
TULSA, OKLAHOMA

Distributed By
PITTSBURGH EQUITABLE METER DIVISION
Rockwell Manufacturing Company
PITTSBURGH 8, PA.

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Stop hose "blow-outs" with B. F. Goodrich rotary drilling hose

Patented metallic mesh tape adds strength without weight

B. F. GOODRICH builds a rotary drill hose you can put out of your mind when you put it on your rig. No more worries about hose "blow-outs", shutdown time, damage to drilling bit or rig, possible injury (and certainly inconvenience) to the crew. Here's the story—inside and out—on this stronger, longer-lasting rotary drilling hose.

Helix tape saves weight—Sturdy plies of duck are reinforced with patented helically-wound wire tape that gives highest burst strength with least weight, most flexibility. The single helically-wound tape ply weighs much less than the fabric plies necessary to give equivalent strength.

Cover resists abrasion—Abrasion-resistant rubber armors this B. F. Goodrich hose cover for rough treatment. And you can let it stand out in the sun, wind, rain, all kinds of weather, without harm.

Easy to handle—No dead weight to drag when this BFG hose is moved on or off the job. Helix tape reinforcement keeps it flexible, because the single ply of tape is more flexible than equivalent multiple fabric plies. Easy to coil up. Hangs well from the standpipe.

Oil-proof tube—Tube is made of a special oilproof rubber compound—using oil in the "mud" will not cause it to swell, or otherwise affect it.

Coupling guaranteed leak-proof for the life of the hose. See this and other fine hose for oil rigs at your local distributor or write: *The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

B.F. Goodrich
RUBBER FOR INDUSTRY

Plus Performance in Power Pumps

The name of Fairbanks-Morse on a power pump is your assurance of *plus* performance . . . of outstanding dependability under all types of operating conditions.

Typical of these ruggedly designed pumps is the 8-Cover Side Pot Duplex Pump illustrated. With enclosed, self-lubricated power end and modern 8-cover side pot fluid end design, this unit is built for efficient, economical handling of water and petroleum products. Where desired, it can be readily adapted for slush service. Large unobstructed fluid passages assure smooth, low velocity flow with minimum frictional losses.

Dependable of course, it's . . .

For plus performance on any pumping job, check the complete line of Fairbanks-Morse Pumps. Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE

A name worth remembering

OIL FIELD EQUIPMENT • DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS • PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

Easy · Economical to Erect

Days . . . and often weeks . . . of construction time can be saved by the Parkersburg Prefabricated Steel Building design which allows fast, economical erection with a minimum of skilled labor.

This saving in time and construction costs with Parkersburg Prefabricated Steel Buildings goes a long ways toward reducing the over-all cost of oil industry housing.

In Parkersburg Prefabricated Steel Buildings all parts are plainly marked to avoid confusion and to simplify and speed up erection.

Those dependable steel buildings are 100 percent salvable and can be easily and quickly dismantled and moved without leaving anything behind except the foundation bolts.

There is another side to Parkersburg Prefabricated Steel Building economy. Their appearance matches the quality and the galvanized finish will last for years under the most severe weather conditions.

It will pay you to investigate the economy, quality and dependability of Parkersburg Prefabricated Steel Buildings for all your housing problems. Ask your Parkersburg Representative for details.

THE PARKERSBURG RIG & REEL CO.

PARKERSBURG & OCS PRODUCTS

GENERAL OFFICES, PARKERSBURG, W. VA.
Plants at Parkersburg, W. Va., Coffeyville, Kan., Houston, Texas

District Offices

Dallas - Houston - Los Angeles - Tulsa - New York

OCS

PARKERSBURG

The inside story—

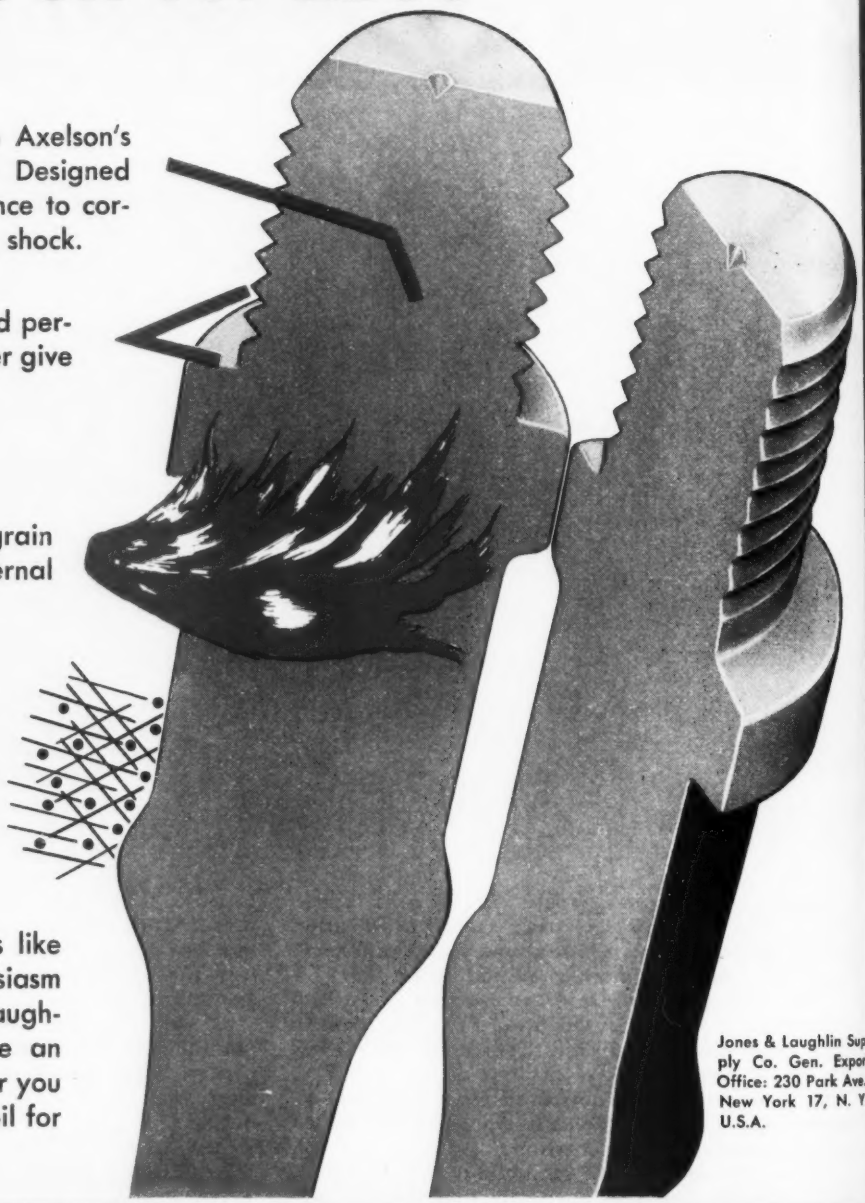
Why AXELSON Sucker Rods lift oil for LESS

Special steel to Axelson's specifications. Designed for high resistance to corrosion, fatigue, shock.

Accurate threads and perfectly square shoulder give straight-line pull.

Heat treating refines grain and eliminates internal stress.

Scale removed and surface cold-worked by shot peening. Increases resistance to corrosion and fatigue.



Little wonder—with features like these—that Axelson enthusiasm runs so high at all Jones & Laughlin Supply stores. You'll be an Axelson enthusiast, too, after you see how these features lift oil for less on your own leases.

Jones & Laughlin Supply Co. Gen. Export Office: 230 Park Ave., New York 17, N. Y., U.S.A.

JONES & LAUGHLIN SUPPLY COMPANY

Stores and Offices in 17 States

Subsidiary of Jones & Laughlin Steel Corporation

General Office

TULSA, OKLAHOMA

J&L STEEL

Acres of steel safely protected!

with DU PONT DULUX Metal Protective Paints

Rusting of exposed metal is an always-present maintenance headache for oil refiners. Structures and equipment require a *rugged* finish to protect the investment against this insidious disintegration. That's why so many maintenance men use DULUX for long-term protection.

These men make their selection on *facts*. They know the DULUX Metal Protective Painting System directly controls corrosion in two important ways. First, the resulting film is highly impermeable to moisture. Thus, an effective barrier is provided. Secondly, the DULUX Primers discourage rusting *chemically*. This two-way approach to the problem is their assurance of long-term protection.

Your selection of the quality paint . . . DULUX . . . is the best insurance you can buy. When you consider the large capital investment represented by your processing equipment . . . when you consider the extra dividends of the added life-span of the DULUX film, your cost-per-gallon is infinitesimal!

For technical advice on your maintenance painting problem, write to E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

DULUX
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Metal Protective PAINTS

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A tough hauling problem { HEAVY LOADS / BAD WEATHER / NO ROADS

...Solved

by the great power + traction of WALTER TRACTOR TRUCKS

• Shown is model AWUS Walter Tractor Truck featuring the super traction of 4-Point Positive Drive and the great power of 300 hp. Butane, 260 hp. Diesel or 250 hp. gasoline engines. Large single tires are 16:00-24.

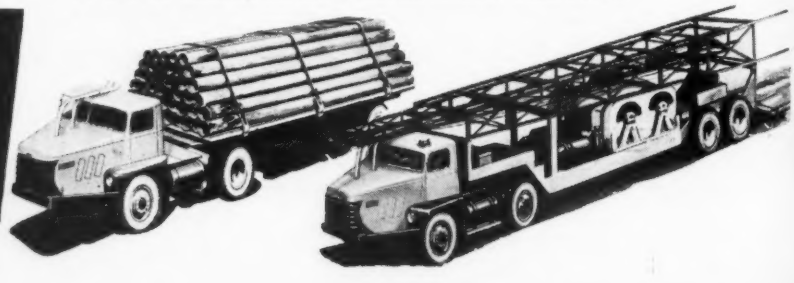
WALTER TRACTOR TRUCKS are designed for heavy duty hauling in severe off-the-road conditions that slow down or stop conventional 2-and 4-wheel drive trucks.

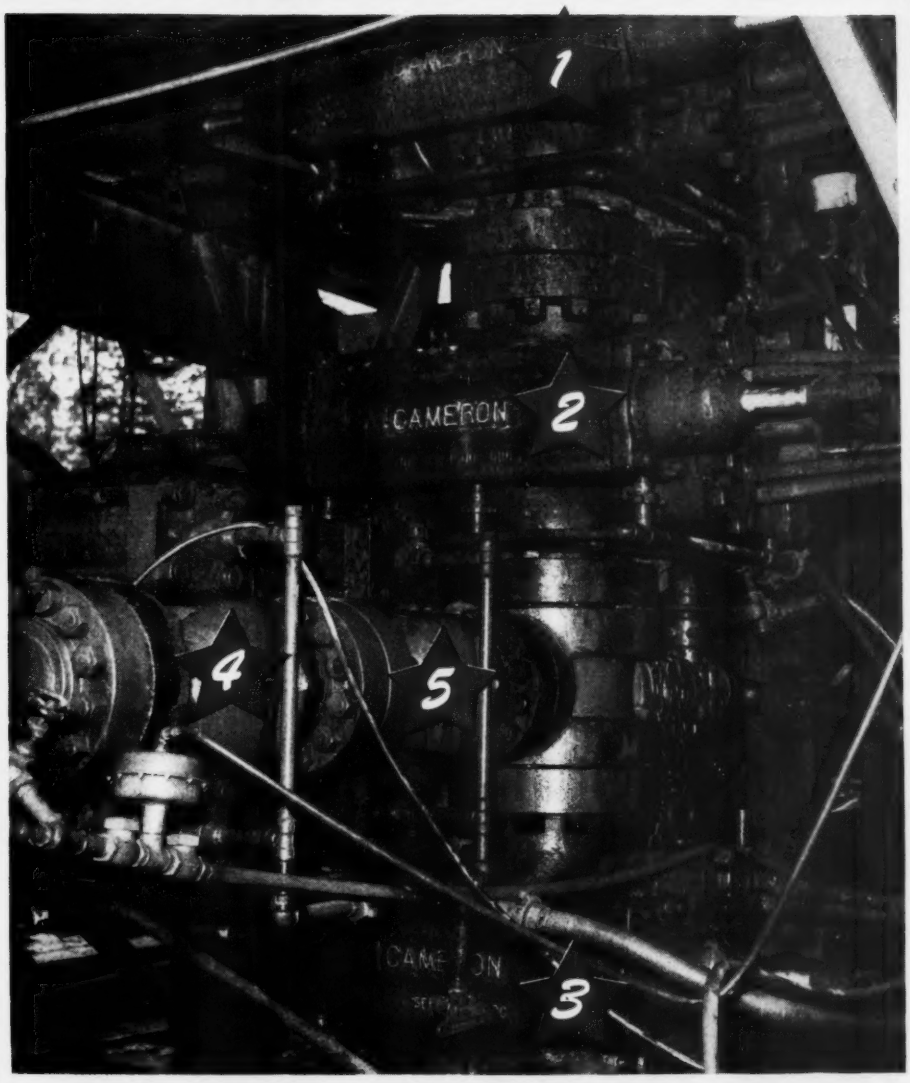
The big advantage of Walter Tractor Trucks is in the never-failing, non-slip traction available in 4 driving wheels, under all conditions. Whereas other drive systems waste power on slipping wheels which spin helplessly—the Walter 4-Point Positive Drive concentrates power only on the *working* wheels. This is accomplished by three automatic locking differentials which act as a "mechanical brain", proportioning power to each wheel according to its traction at all times.

This feature—plus suspended double reduction drive, tractor type transmission, high ground clearance, short wheelbase, hydraulic steering, air brakes, easy maneuverability—make Walter Tractor Trucks far superior for moving heavy rigs and servicing equipment to remote locations. Write today for literature giving full details.

WALTER MOTOR TRUCK CO., 1001-19 Irving Ave., Ridgewood, 27, Queens, L. I., N.Y.

WALTER
TRACTOR TRUCKS





PICTURE OF PREPAREDNESS

While Cameron pressure-operated drilling control units may be assembled in several safe and convenient hook-ups, the assembly presented above—installed on a deep test in South Louisiana—is probably the most popular combination of control units. It consists of: (1) and (2) 10-inch, Series 1500, QRC Blowout Preventers equipped with pipe rams; (3) 10-inch, Series 1500, QRC Blowout Preventer equipped with blind rams for closing the well bore with pipe out of the hole; (4) and (5) 6-inch, Series 1500, HCR Gate Valves to provide a double safeguard against loss of control thru the flow line. Interested operators are invited to write for descriptive literature or refer to The Composite Catalog for complete details.

CAMERON IRON WORKS, INC. • P. O. BOX 1212 • HOUSTON, TEXAS

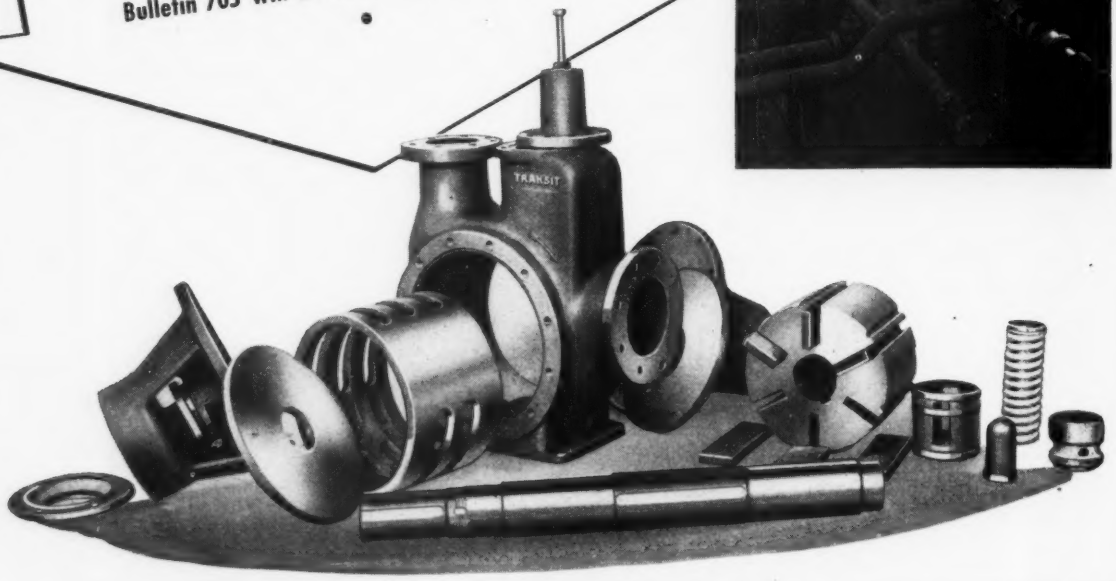
EXPORT: 74 TRINITY PLACE, NEW YORK, N. Y.

SIMPLICITY

• BASIS OF SUCCESS •

TRANSIT ROTARY Pumps owe their unique success in many fields of service to Simplicity in Design, resulting in fewer wearing parts, easily renewed.

Bulletin 705 will be furnished gladly on request.



NATIONAL TRANSIT PUMP AND MACHINE CO.

Home Office and Works, OIL CITY, PENNA. Mid-Continent Warehouse, 318 East Archer Street, TULSA, OKLA.

NEW YORK - PHILADELPHIA - CHICAGO - CLEVELAND - PITTSBURGH - LOS ANGELES - HOUSTON - TULSA

Allied Supply Company, 2068 East 37th Street, Los Angeles, California

The Lang Company, 267 West First South St., Salt Lake City, Utah

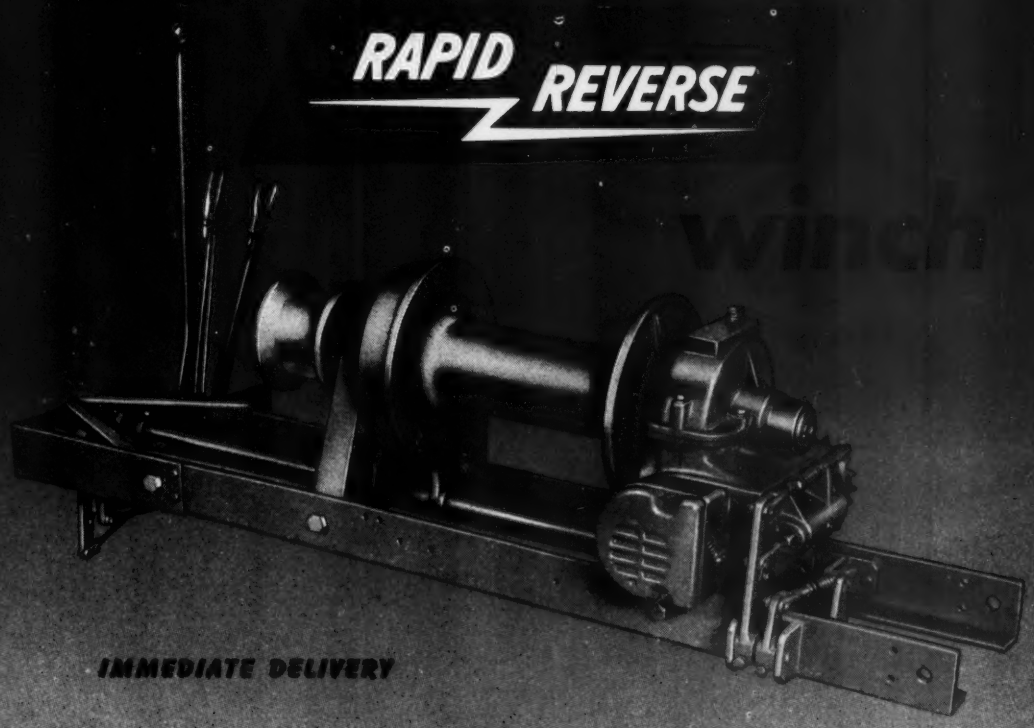
Eugene V. Winter Co., 15 Drumm Street, San Francisco, California

Standard Supply and Hardware Company, 822-838 Tchoupitoulas St., New Orleans, Louisiana

Reeves & Skinner Machinery Co., 2211 Olive Street, St. Louis, Missouri

GarWood

RAPID REVERSE



IMMEDIATE DELIVERY

TIME is saved. Hoisting, holding and paying out are all done under full load without declutching the engine or power take-off. The integral reverse gear mechanism provides instantaneous and complete winch action at all times. This is exclusive with Gar Wood.

SAFETY is promoted with built-in automatic safety brake on the worm, detachable back draft clutch, and full control of the load at all times. The high quality of all parts is important in the long life and dependable operation of all Gar Wood Winches. *Flexible mounting* is another exclusive Gar Wood feature . . . the constant flexing of the chassis is absorbed by this design, thus preventing cramped drums or distorted shafts.

The Rapid Reverse Winch is available from stock in two sizes having capacities of 20,000 and 30,000 pounds.

ASK FOR NEW BULLETIN W149-R → In addition to the Rapid Reverse Winch, this bulletin also illustrates and describes the many other types and sizes of Gar Wood Winches for all kinds of jobs.

GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC.

FLYING MUD ENGINEERS

make remote water locations only a few minutes away!

The Magcobar "Mud Hen" is a familiar sight on the drill-barge circuit. Piloted by an experienced mud engineer, this amphibious airplane has proved extremely practical for extending Magcobar field service to remote water jobs. Inaugurated more than a year ago to provide the final measure of prompt, dependable service to the numerous drill-barges on the Louisiana coast, a second plane has since been added to expand this service.

Look to MAGCOBAR for improved mud products and service!

Magcobar

Complete

DRILLING MUD SERVICE

MAGNET COVE BARIUM CORPORATION

MALVERN, ARKANSAS **HOUSTON, TEXAS**

Export Representative: Guy E. Daniels, 30 Rockefeller Plaza, New York, N. Y.

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WHEEL TRUEING TOOL CO. of CANADA, LTD.

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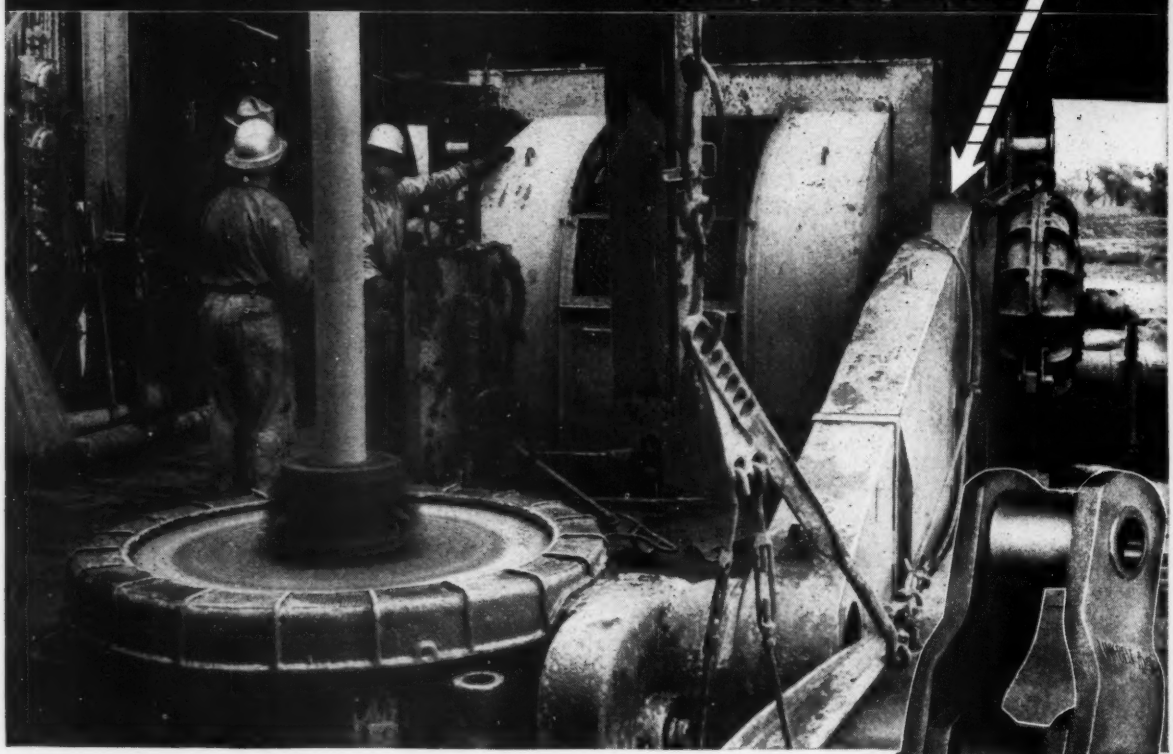
Windsor, Ont. • Canada

BUILT TO TAKE THIS SPEED AND STRAIN.....

LINK-BELT API ROTARY CHAIN

...the most dependable and widely used of any rotary chain



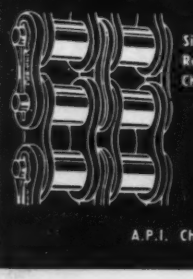
It's the *extra* value that Link-Belt has always built into SS-40 Hyper Rotary Chain that gives it *extra* strength to take the speed and strain when they really throw the rotary table in "high-high".

These same extra values . . . values that pay off in efficiency, dependability and outstanding performance . . . have stamped Link-Belt SS-40 Hyper the favorite among experienced drillers everywhere.

Run over cut tooth sprockets with ample lubrication, this Link-Belt SS-40 Hyper Rotary Chain will make many a hole without a sign of wear. And that's why quality conscious operators always specify Link-Belt API Rotary Chain. It's built to take the speed and strain. It's backed by more than 70 years of chain developments and improvements.

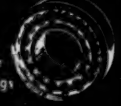
LINK-BELT COMPANY

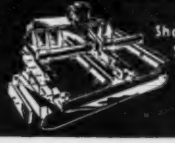
Indianapolis 6, Dallas 1, Houston 2, Los Angeles 33, Kansas City 6, Mo., New York 7, Toronto 8.
Distributors in all fields. 11,115

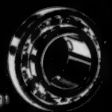


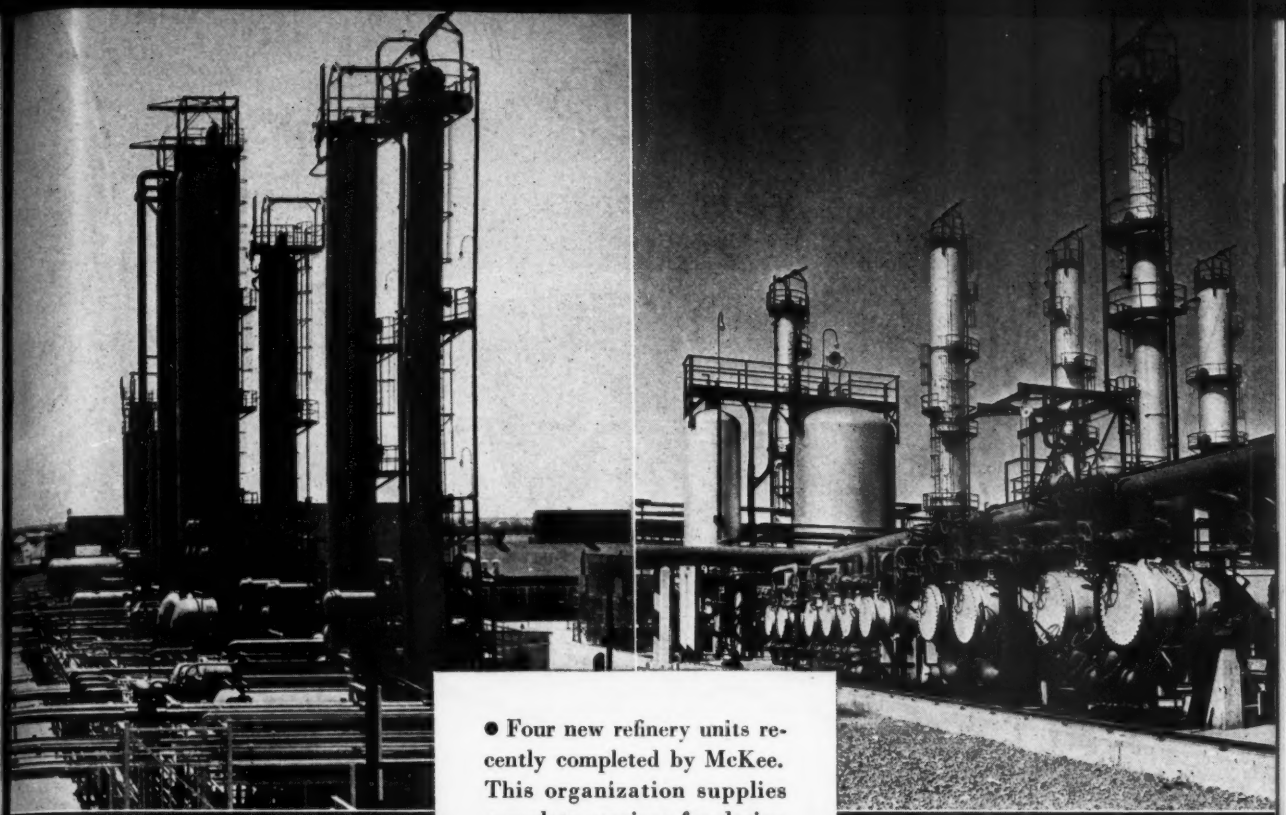
LINK-BELT

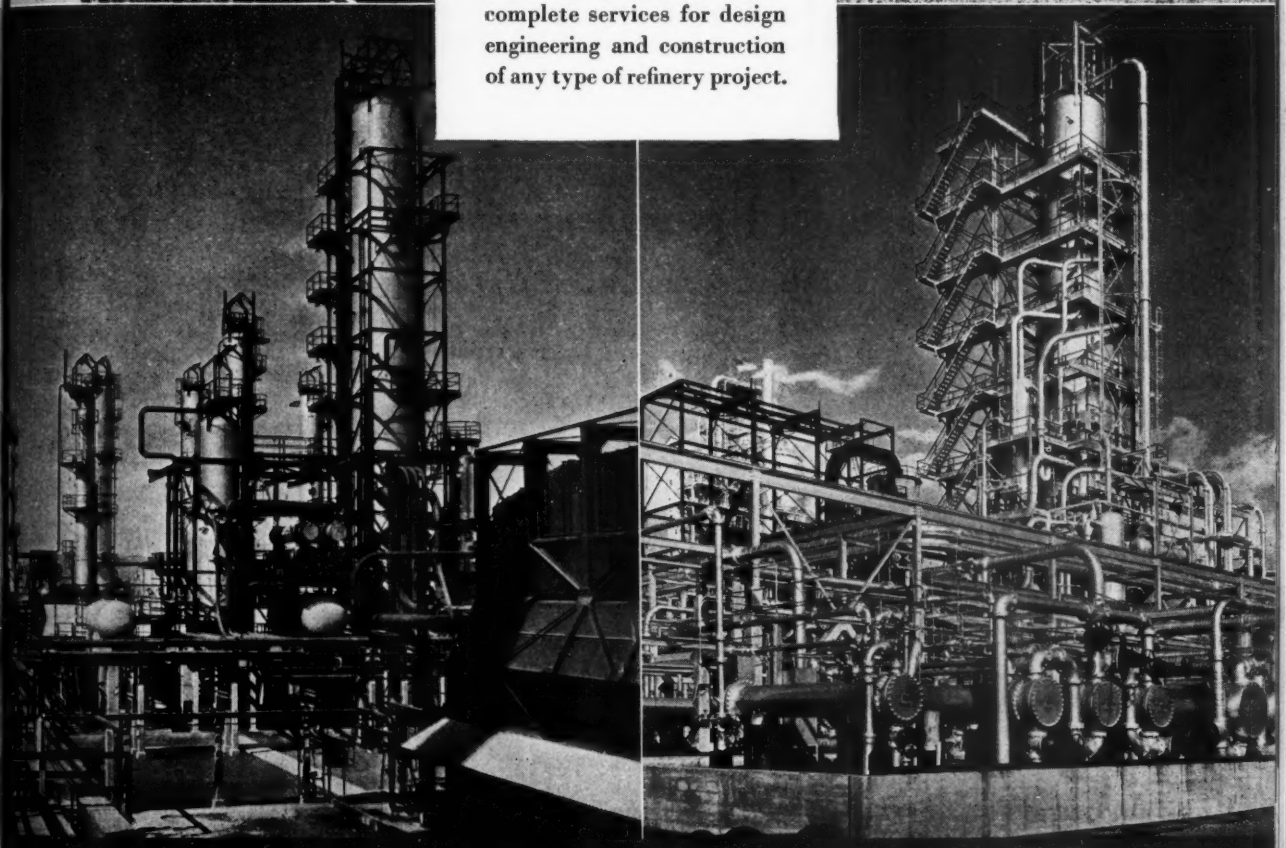
Serves the Oil Industry











● Four new refinery units recently completed by McKee. This organization supplies complete services for design engineering and construction of any type of refinery project.

McKEE

UNDIVIDED RESPONSIBILITY IN ONE ORGANIZATION

Lebanon and Firth-Vickers join forces ... *to bring you the best in centri-die (centrifugal) permanent mold alloy castings.* For heat and corrosion resistant service.

THE centri-die process of producing centrifugal castings in permanent molds is the most important improvement of a generation of alloy steel foundry progress. Developed by Firth-Vickers of Sheffield, England, before the "Battle of Britain", the unusual design characteristics and integrity of these castings made possible the famous Rolls Royce, De Havilland and other British jet engines.

Now Firth-Vickers has chosen the Lebanon Steel Foundry as its American licensee and correspondent, with full access to all their metallurgical, design and other engineering data. This makes available to American industry the newest techniques of permanent-mold centrifugal casting. By this process tubular and cylindrical structures can be made out of alloys which are difficult or impossible to forge or cast by any other method. For us and our customers it virtually wipes out years of costly experimentation. An addition to our foundry at Lebanon has just been completed and we are now producing centri-die alloy castings of known characteristics and assured integrity.

LEBANON STEEL FOUNDRY • LEBANON, PA.

"In The Lebanon Valley"

LEBANON ALLOY AND STEEL **Castings**

CIRCLE L

HIGHLIGHTS OF LEBANON PROGRESS

1911

Company organized.

1915

Herault furnace installed, one of the first electric furnaces in the U.S.

1926

Production of alloy steel castings began.

1930

Ajax high frequency induction furnaces installed. The first used in this country for producing alloy castings.

1933

Lebanon becomes exclusive American licensee of George Fischer, Ltd., Schauffhausen, Switzerland. Swiss Chamotte method first used in America in producing alloy and carbon steel castings.

1948

Lebanon and Firth-Vickers Stainless Steel Ltd. sign agreement, making available to American buyers of heat and corrosion alloy castings all the experience and methods developed by the largest producer of such castings in Europe.

Get This Book
"Centri-die Centrifugal Castings"

Prepared by Lebanon and Firth-Vickers engineers to explain fully the practical advantages of the centri-die process of making alloy castings centrifugally in permanent molds. While it has been written primarily for the design and metallurgical engineer, it also will be of interest to executives who like to keep abreast of new manufacturing and production methods. Write for a copy of Bulletin K.

For uniform [illegible] quality on pipeline applications...

BOOST RPM

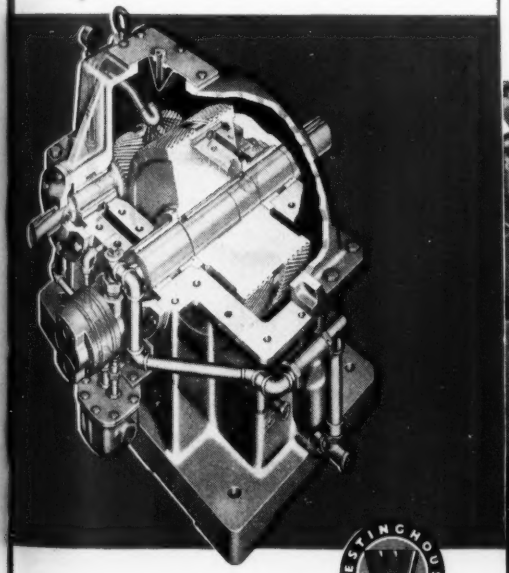
GET THESE 8 ADVANTAGES

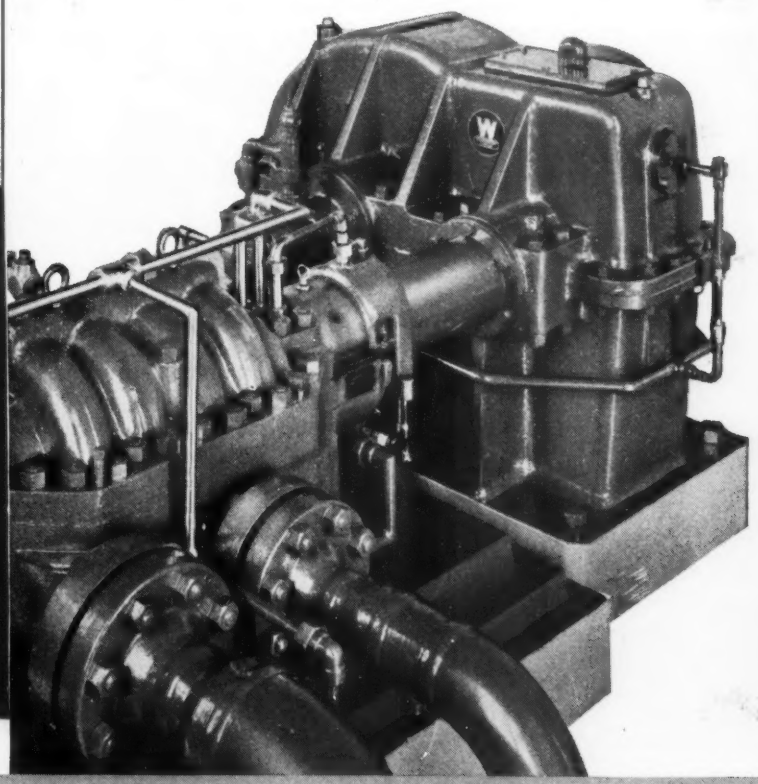
1. **HERRINGBONE GEARS** provide uniform load across face.
2. **CENTER GROOVE** provides uniform tooth deflection, avoids heat generation and power loss due to trapped oil.
3. **BP GEAR STEEL** . . . with hard wearing surface to resist wear, and tough, ductile structure to resist shock loads.
4. **HOBBED GEARS** assure extreme accuracy, and smooth, quiet operation.
5. **PRESSURE LUBRICATION SYSTEM** with cooler and strainer, assures clean, cool oil to all moving parts.
6. **OVERSIZE BEARINGS** . . . specially designed for high speed. Oversize shafts.
7. **DYNAMIC BALANCING** of rotating parts eliminates vibration.
8. **EXTRA-HEAVY GEAR CASE** gives strength, accurate alignment.

with Westinghouse High-Speed Units

Oil men can trust the unvarying high quality they get in Westinghouse high-speed units. This quality is no accident . . . behind it lie the unexcelled research facilities, progressive engineering, and uncompromising manufacturing, inspection and testing standards which have been maintained at Westinghouse for over 60 years.

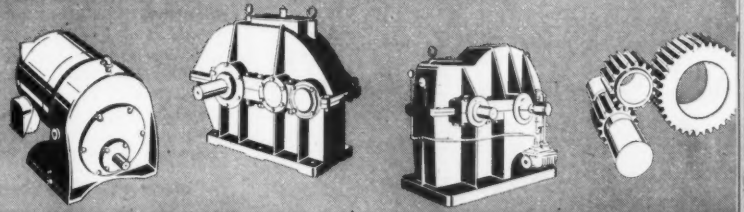
To get the full story, call your nearby Westinghouse office, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-07271





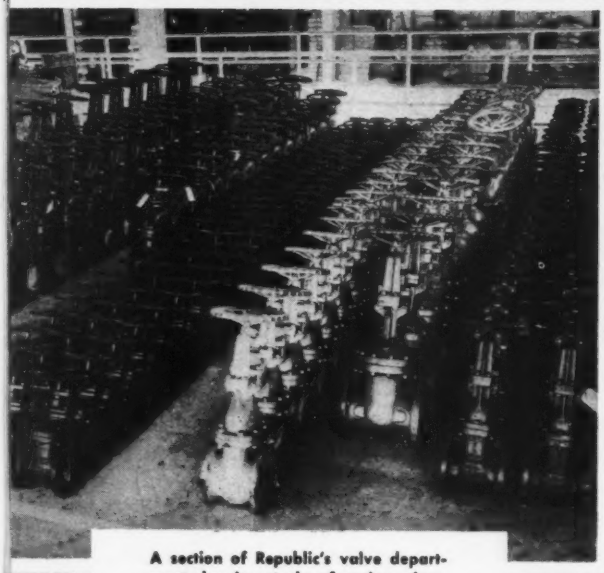
Westinghouse

RPM FITTED DRIVES



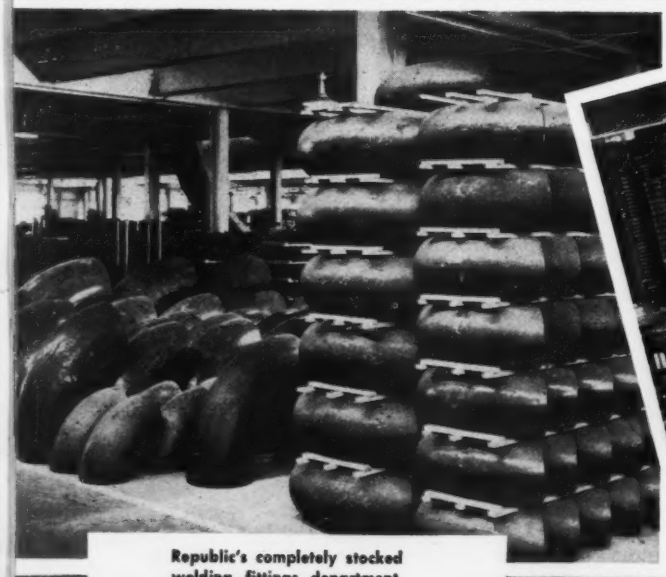
GEARMOTORS • SPEED REDUCERS • SPEED INCREASERS • INDUSTRIAL GEARING

MODERN REFINERY



A section of Republic's valve department showing stocks of various sizes.

Plug valve stocks at Republic's new central warehouse and store in Houston.



Republic's completely stocked welding fittings department.

Partial view of flange stocks maintained at Republic's new central warehouse and store.

REPUBLIC SALES AND SERVICE POINTS

ARKANSAS—El Dorado, Patmos; COLORADO—Denver†; ILLINOIS—Chicago†, Grayville, McLeansboro, Salem; KANSAS—Ellinwood, Russell, Wichita†; LOUISIANA—Haynesville, Lake Charles†, Mamou, New Iberia, Rodessa, Shreveport*; MISSISSIPPI—Hattiesburg, Jackson; NEW MEXICO—Artesia, Eunice, Hobbs; OKLAHOMA—Bartlesville†, Cement, Elmore City, Oklahoma City, Seminole, Tulsa†; TEXAS—Abilene, Alice, Big Spring, Borger, Columbus, Corpus Christi, Dallas†, Electra, Falfurrias, Fort Worth†, Freer, Hebbronville, Houston*, K-M-A, Kennedy, Kermit, Kilgore, Nocona, McAllen, Odessa*, Olney, Pampa, Pleasanton, San Antonio†, Sundown, Talco, Victoria, Wichita Falls*.

*District offices and stores. †Sales Office.

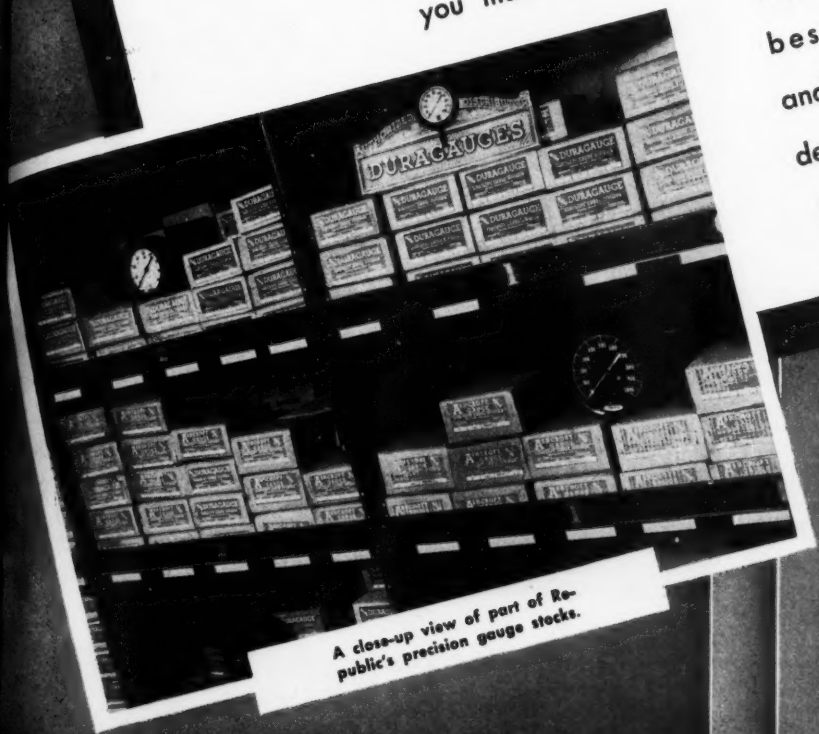
...IRY Warehousing

REPUBLIC STYLE . . .

Makes your large inventory investments unnecessary —
Eliminates your costly accumulation of "dead" stocks —
Reduces your losses sustained from obsolescence —
Assures you proper stocks when and where they are needed —

● These are important advantages you enjoy when you make REPUBLIC your warehouse for refinery supplies. For everything best in refinery supplies and service you can depend on REPUBLIC. . . .

Your Supply Store



A close-up view of part of Republic's precision gauge stocks.

Republic Supply
COMPANY

GENERAL OFFICES · · · HOUSTON 1, TEXAS

2*

SERVICE, four deep!

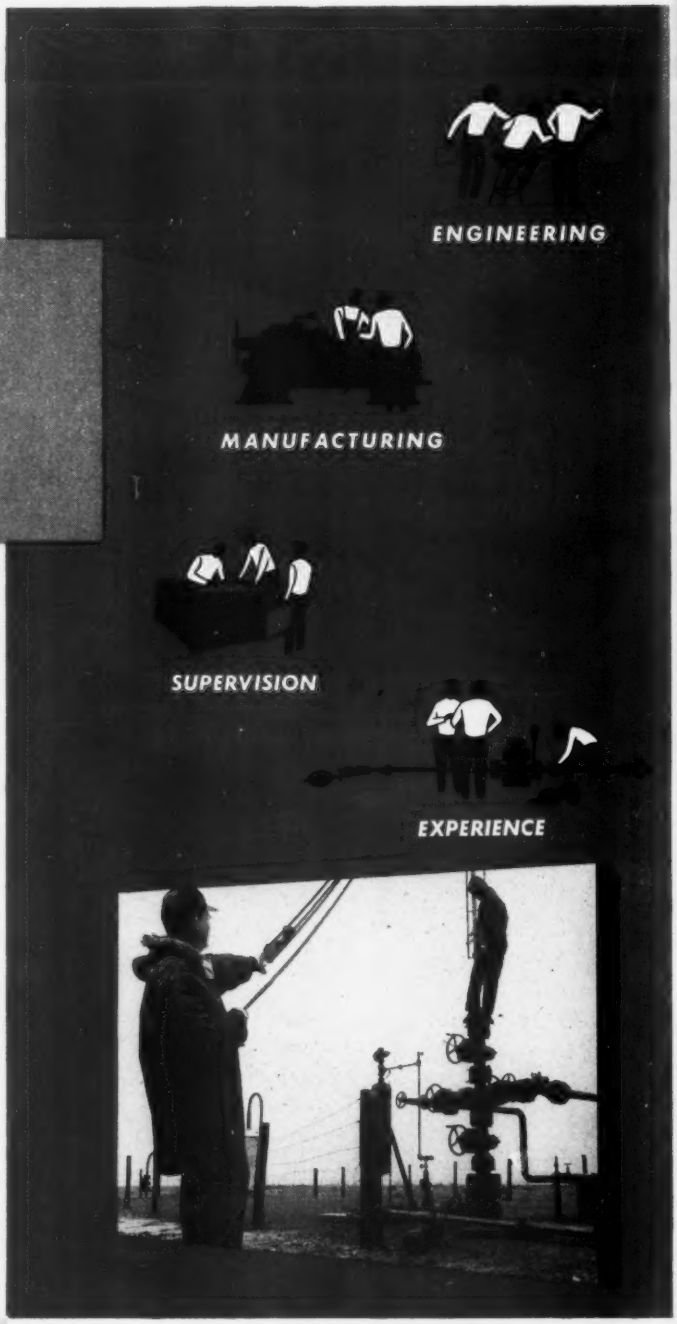
When Otis Pressure Control, Inc., accepts the job of performing wire line service work on flowing wells, that service neither begins nor ends solely with field personnel and equipment available at the well site. Whether it's a routine or emergency operation you can call Otis with confidence. You'll get service, four deep! Experience. Supervision. Engineering. Manufacturing.

Each service unit is headed by a wire line specialist, highly-trained through years of field *experience* in high-pressure production problems and practices. This man directs operations with mature consideration for safety to personnel and well facilities; the efficient use of wire line tools; and the economic success of the job to the customer.

If he is faced with a complex operation requiring executive *supervision* that assistance is available immediately.

If standard tools and equipment are not adequate under certain unpredictable conditions Otis *engineering* personnel steps into the picture. Their designs for new or modified tools are then executed by one of the finest specialized *manufacturing* plants in the petroleum industry.

Otis Wire Line Services, performed under pressure, include: running and pulling Otis Sub-Surface Controls; surveying tubing for corrosion; perforating or cutting tubing; cleaning paraffin; fishing jobs; drilling gate valves; repairing or replacing wire line stuffing boxes; plugging tubing and drill pipe.



***NO. 2** *in a series of high-pressure production problems and practices and the allied use of Otis Sub-Surface Controls and Services. Reprints of the series, suitable for filing, are available upon written request to Otis Pressure Control, Inc., Box 7206, Dept. B, Dallas, Texas.*

NEW LITERATURE AVAILABLE

"Otis High-Pressure Wire Line Stuffing Box." Bulletin No. 48-103 gives a comprehensive description of the new Otis Wire Line Stuffing Box (10,000 p.s.i. test). Included are data, parts list, and operating instructions. Write to address shown above.

PRESSURE CONTROL - OTIS - SERVICE - EQUIPMENT

OTIS PRESSURE CONTROL, INC.

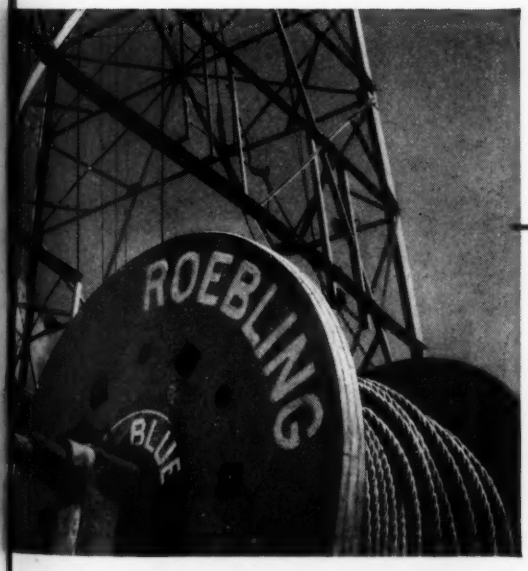
(T-19)

FIELD OFFICES **TEXAS:** HOUSTON, CORPUS CHRISTI, ODESSA and LONGVIEW **OKLAHOMA:** OKLAHOMA CITY **LOUISIANA:** NEW IBERIA

OTIS ENGINEERING CORPORATION — MANUFACTURE AND DEVELOPMENT

DISTRIBUTORS **OTIS PRESSURE CONTROL, INC.,** DALLAS, TEX.; **OTIS EASTERN SERVICE, INC.,** BOLIVAR, N. Y.; **WESTERN PRESSURE CONTROL,** LOS ANGELES, CALIF.

EXPORT SALES AND SERVICES **OTIS PRESSURE CONTROL EXPORT, INC.,** POST OFFICE BOX 7206, DALLAS, TEXAS, U. S. A., CARACAS, SOUTH AMERICA



BACK OF SPEEDING LINES OF CARS are bustling production lines. And back of *them* is a vision typically American . . . a vision based on the confidence that industry could devise new techniques and place the one-time "luxuries of kings" within the reach of everyone.

With confidence like that, Roebling has led the way in developing and making products that are unsurpassed in performance and low operating cost. The confidence our products and engineering have won throughout industry is an asset that every Roebling employee works to preserve.

HOW OIL MEN CUT WIRE ROPE COSTS!

ROEBLING PREFORMED "BLUE CENTER" STEEL WIRE ROPE slashes costs wherever severe bending is encountered. The unequalled combination of Roebling "Blue Center" Steel and Roebling preforming gives you tops in flexibility and wire rope service life.

You'll find that Roebling Preformed "Blue Center" saves time and money in other ways, too. It's easy to handle, for it doesn't twist or kink. You can cut it without seizing. Broken wires lie flat and don't puncture the hands. It reduces whipping . . . spools uniformly and smoothly.

Your Roebling Field Man can tell you whether Preformed will cut costs on *your* installations. His answer will be impartial, for Roebling makes both Preformed and Non-Preformed . . . a rope that's exactly *right* for every given job. Write or call him at your nearest Roebling branch office.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

Distributed by: **The National Supply Company**
Republic Supply Company

ROEBLING

★ *WIRE ROPE AND STRAND* ★ *FITTINGS* ★ *SLINGS* ★ *SUSPENSION BRIDGES AND CABLES* ★ *AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS* ★ *AERIAL WIRE ROPE SYSTEMS* ★ *ELECTRICAL WIRE AND CABLE* ★ *SKI LIFTS* ★ *HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL* ★ *SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH* ★ *LAWN MOWERS*

Welding heavy-duty grader wheels by the UNIONMELT *welding process.*

Swing into Mass Production *with the UNIONMELT Welding Process . . .*

It is automatic—fast—easy—Makes top quality welds—Gives maximum production with a minimum of space.

The extremely high currents that can be used with the UNIONMELT welding process result in deep penetration and high welding speed. The weld metal is clean, uniform, and dense; and requires no chipping or peening to finish it. The UNIONMELT process of welding electrically beneath a protective layer of granulated welding composition is ideally suited to repetitive welding. Material from 16 gage to 1½ inches in thickness can be welded in a single pass with this process. By using the proper UNIONMELT composition and welding rod, alloy steels and even non-ferrous alloys can be welded as easily as the regular grades of mild steel.

There are many LINDE methods for joining, forming, cutting, and treating metals. LINDE engineering service is always on call to help customers with production, construction, and maintenance jobs. Just call the nearest LINDE office.

Here are the parts that make up a heavy-duty wheel.

Here are the completed wheels—ready to roll.

Linde
Trade-Mark

THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation
General Office: New York, N. Y. UCC Offices in Principal Cities
In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto
The words "Linde," and "Unionmelt" are registered trade-marks of The Linde Air Products Company

Report on

THE PURE OIL COMPANY'S

West Poison Spider Wildcat

Natrona County, Wyoming

WORLD'S DEEPEST PRODUCER

This important new producer was brought in flowing 900 barrels of 43-gravity oil per day from a total depth of 14,309 feet.

4½" and 2⅞" NATIONAL SEAMLESS DRILL PIPE

National Seamless 4½" O.D., Grade "E" Drill Pipe was used to reach a depth of 13,841'.

National Seamless 2⅞" O.D., Grade "E" External Upset Drill Pipe was used to reach the total depth of 14,309', and with no fishing jobs or laying down of joints.

13⅜" NATIONAL SEAMLESS CASING

A string of 13⅜" O.D. National Seamless 68 lb., J-55 Casing was set at 3,198' depth.

7" NATIONAL SEAMLESS CASING

A combination string of 7" O.D. National Seamless N-80 Casing, upper part internal upset and lower part regular, 29, 32, and 35 lbs., was set at 13,791' depth.

5" NATIONAL SEAMLESS CASING

536' of 5" O.D. National Seamless, N-80 Casing (liner) was set at depth interval 13,651' to 14,187'.

2" and 2½" NATIONAL SEAMLESS TUBING

A combination string of 2" and 2½" National Seamless N-80 Tubing was run to a depth of 13,582' to permit producing from below a production packer set at 13,551'.

Pure Oil Company's West Poison Spider Wildcat, located on the Eastern flank of Wind River Basin, Natrona County, Wyoming.

WYOMING takes the spotlight as to location—Pure Oil is credited with a major accomplishment in the industry, and, NATIONAL drill pipe, casing, and tubing furnish the evidence of advanced materials, in establishing this new record for deep production. Once again, a combination of skill in the design of well strings, expert supervision on the job, and sound reliable materials demonstrate the progress within and leadership of the American Oil Industry. For complete information on National Seamless drill pipe, casing, and tubing, write National Tube Company, Frick Building, Pittsburgh 19, Pa., for Bulletin No. 15.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

WALLS WITHOUT WELDS

USS

NATIONAL SEAMLESS

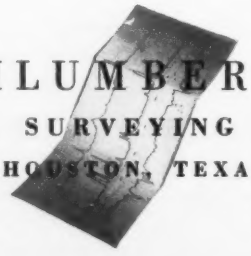
drill pipe...casing...tubing

UNITED STATES STEEL

Chapter Six of THE SCHLUMBERGER STORY

We asked for it! In order that we might find, and correct, any weakness in the Schlumberger services, a few months ago we employed an independent research organization to conduct a survey throughout the industry.

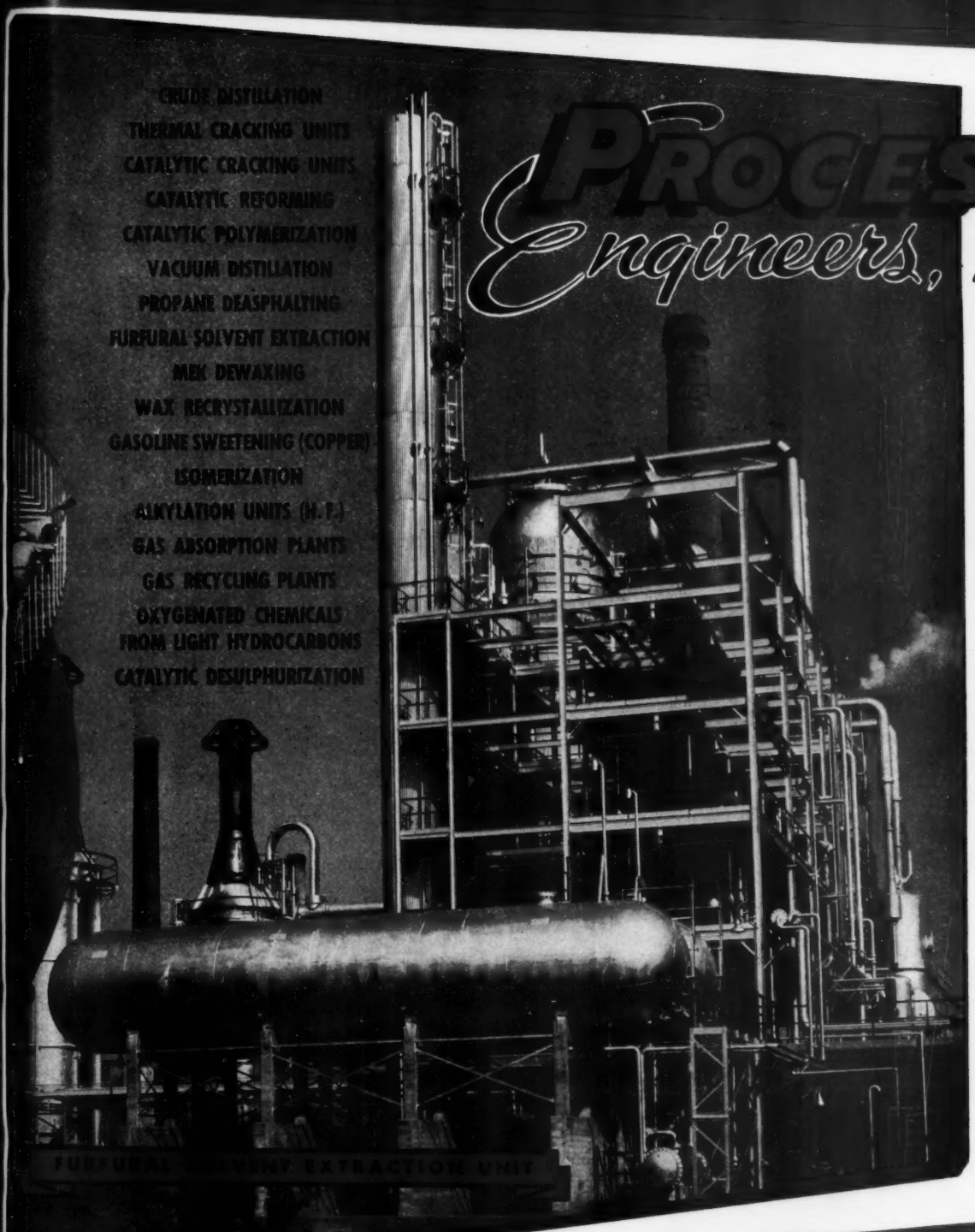
Even though the survey revealed that a great majority of oil men are satisfied with the high quality of our services, we will continue to improve the number and quality of the Schlumberger aids to the oil industry.



SCHLUMBERGER
WELL SURVEYING CORP.
HOUSTON, TEXAS

CRUDE DISTILLATION
THERMAL CRACKING UNITS
CATALYTIC CRACKING UNITS
CATALYTIC REFORMING
CATALYTIC POLYMERIZATION
VACUUM DISTILLATION
PROPANE DEASPHALTING
FURFURAL SOLVENT EXTRACTION
MEK DEWAXING
WAX RECRYSTALLIZATION
GASOLINE SWEETENING (COPPER)
ISOMERIZATION
ALKYLATION UNITS (H. F.)
GAS ABSORPTION PLANTS
GAS RECYCLING PLANTS
OXYGENATED CHEMICALS
FROM LIGHT HYDROCARBONS
CATALYTIC DESULPHURIZATION

PROCESS Engineers, Inc.



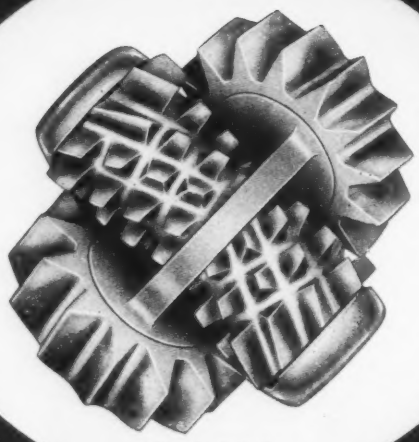
FURFURAL SOLVENT EXTRACTION UNIT

DESIGN — ENGINEERING — CONSTRUCTION

FOR PETROLEUM REFINING — GAS — PETRO-CHEMICALS

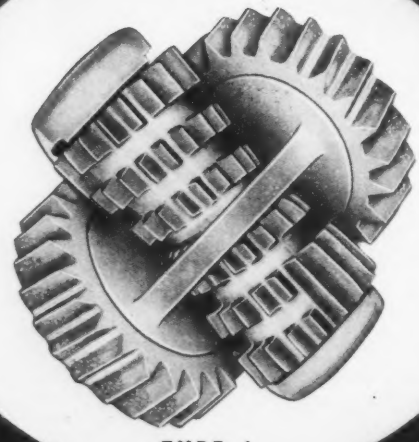
PROCESS ENGINEERS' Engineering Division is staffed with competent process engineers and designers to cover all phases of refinery design and engineering, procurement of materials and erection supervision. Our services include the design and construction of natural gasoline absorption plants, gas recycling and reconditioning plants, appraisals, reports and consulting services on operating problems of refineries and natural gasoline plants. The Petro-chemical Division can offer oxygenated chemicals produced from light hydrocarbons.

5625 DANIELS — DALLAS, TEXAS



TYPE DDT

TYPE K-2P



TYPE 4

H.C. SMITH ROCK BITS

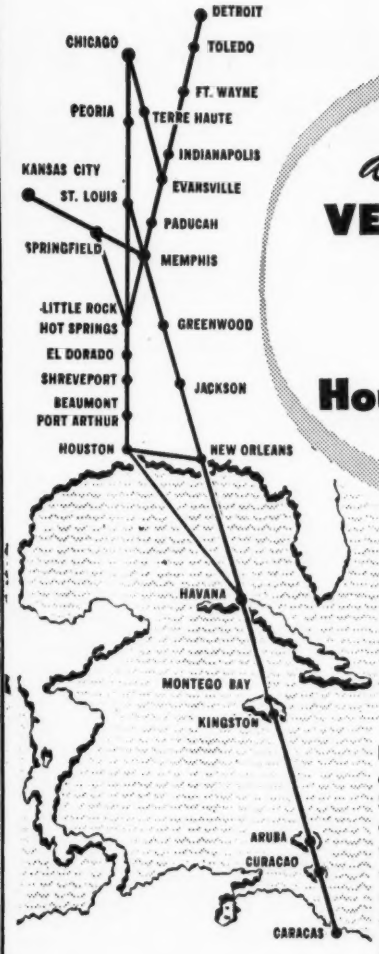
H C Smith Oil Tool Co.

GENERAL OFFICES AND PLANT: P.O. BOX 431, COMPTON, CALIF.

Chicago and Southern Air Lines takes pleasure in announcing its new direct route from the center of the industrial United States, through the heart of the Caribbean Islands, to the mainland of South America.

NOW

a Direct Route to VENEZUELA, JAMAICA AND CUBA from Houston & New Orleans



For the manufacturer, exporter and shipper—a direct one-carrier service to Venezuela and South America from the oil and industrial area of the Southwest. Fast one-plane service to Caracas and Kingston. Non-stop service from Houston to Havana. Three flights weekly from both Houston and New Orleans gateways. Departures every Tuesday, Thursday and Saturday afternoon.

Fast, four-motored Dixieliner service. Dependability assured by Chicago & Southern's twelve-year record of perfect safety.

Attractive all-expense tours to Havana, including hotels, all meals, and air fare. Also ask about excursion fares to Havana at 25% reduction. See your travel agent or nearest C&S ticket office for full information.

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INTERNATIONAL AIR CARGO carried on all flights. For information on rates and services contact your nearest C&S traffic office or Cargo Traffic and Sales Mgr., Memphis, Tenn.

★

CHICAGO & SOUTHERN AIR LINES

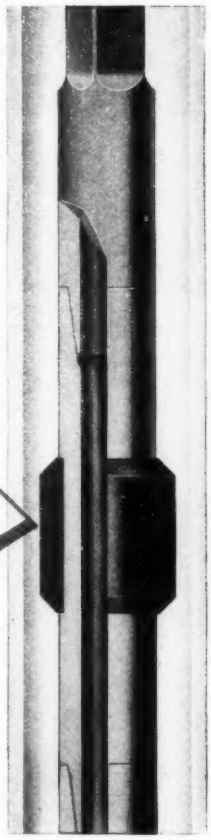
General Office: Memphis, Tennessee, U.S.A.

C★S

Save your Surface Casing from Kelly wear ...

WITH A...

PATTERSON - BALLAGH KELLY SUB STABILIZER



That all-important top joint of casing stays after the drilling contractor leaves the location. There is no need for it to be almost worn through from the beating the kelly gives it. Protect your surface casing with a Patterson-Ballagh Kelly Sub Stabilizer installed on a saver sub.

Typical reasons for kelly wobble are the rotary table not being centered immediately over the casing, the crown block and traveling block not lining up with the hole, and a slight kink in the kelly. With the kelly 20′ down, a slight amount of wobble will cause a corner of the "grief stem" to contact the side of casing and wear it through in a short time.

With a 4¼" square kelly hanging in 9⅝" casing, as shown in the illustration on the right, the distance between the side of the casing and the corner of the "grief stem" is 1²⁹⁄₃₂". This is a small amount of clearance when you consider the number of causes that may make the kelly wobble. The cross section shown has a 4¼" Kelly Sub, 6" O.D., grooved to 5½", with a Patterson-Ballagh Stabilizer, Code: FLAX, installed. The 7⅞" diameter of this Stabilizer gives ample protection against wear and does not interfere with mud circulation. Install a Patterson-Ballagh Kelly Sub Stabilizer on your saver sub *today* and save your surface casing.

PATTERSON BALLAGH · SEAL OF QUALITY · OIL FIELD SPECIALTIES

Specify

PATTERSON-BALLAGH

DIVISION OF BYRON JACKSON CO.

KELLY SUB STABILIZERS

MAIN OFFICE: 1900 EAST 65th STREET, LOS ANGELES 1, CALIFORNIA

6247 Navigation Blvd., Houston 11, Texas • 808 Graybar Bldg., New York 17, N. Y. • 330 Russ Bldg., San Francisco 4, Calif.
T.I.P.S.A., Santiago Del Estero 286, Buenos Aires, Argentina • H. F. Towler, 9 Cavendish Square, London, W1, England

Is THIS the pump you need?

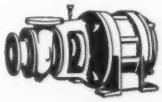
THE *Electrifugal* PUMP

IT'S COMPACT Pump and motor are combined in one rigid cast iron frame. Fits easily into close quarters—is quickly installed as a "package," and operates in any position—no shafts to align. Just bolt it down, make power and pipe connections, and start pumping. Capacities 15 to 1400 gpm, heads to 500 ft.

IT'S EFFICIENT Drip-proof motor is of Allis-Chalmers Lo-Maintenance design, specially built for pumping service. Pump has such long-service features as bronze wearing rings, new plastic water seal, five or more rings of packing, and first class construction throughout. Every unit is factory tested for efficiency, capacity and head.

IT'S AVAILABLE Many sizes of the Electrifugal and other smaller Allis-Chalmers pumps are now in stock for immediate delivery. Perhaps the size you need is ready. Phone or wire your nearest Allis-Chalmers office or dealer for up-to-the-minute information on availabilities and deliveries. For information on the complete A-C line of centrifugal pumps, ask for Bulletin B6059D. ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN. A 2381

PEDRIFUGAL
The new A-C pump for flexible Texrope V-belt drive. Capacities to 500 gpm, heads to 100 ft.



SS UNIT
Close-coupled pump and motor units, made in 234 standard ratings, to 2500 gpm.

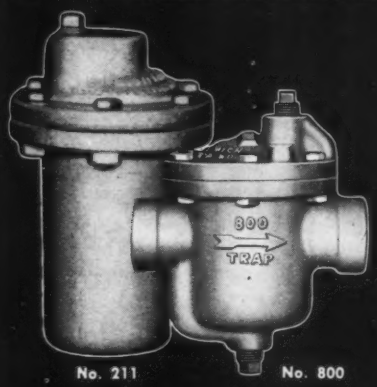
Electrifugal, Pedrifugal, SS Unit and Texrope are Allis-Chalmers Trademarks.

ALLIS-CHALMERS

One of the Big 3 in Electric Power Equipment—Biggest of All in Range of Industrial Products

For Fuel Savings and Maximum Production

SELECT THE CORRECT STEAM TRAP FOR THE JOB!



No. 211 No. 800

Above left — Armstrong bottom inlet—top outlet series trap.

Above right — Armstrong No. 800 side inlet—side outlet trap.

PROOF THAT ARMSTRONG TRAPS PAY DIVIDENDS:

½ TON COAL SAVED daily at American Snuff Co., Clarksville, Tenn., with 12 No. 813 traps on tobacco drying kiln. Also ½ hour faster heating up.

15% FUEL SAVING, 62% less maintenance with Armstrong Traps at Grove City Floral Co., Grove City, Pa.

30% LESS fuel consumption, 65% LESS water consumption, and more extraction of oil from material being crushed, after use of Armstrong traps.—Pacific Nut Oil Company, Los Angeles.

ONE BOILER INSTEAD OF TWO used after installing Armstrong traps. Also 30-ton-per-month saving in fuel.—Daniel Bassi and Co., Buenos Aires, Argentina.

In order to maintain high temperatures, high production and minimum fuel consumption it is essential that steam traps be correctly selected for each piece of equipment in your plant. Don't select traps by pipe sizes alone. Here's a convenient check list for proper trap selection:*

1. DOES THE TRAP HAVE ADEQUATE CAPACITY FOR PEAK LOADS? Traps should have the capacity to take care of the above normal condensate loads encountered in starting up cold equipment. This will often save hours of warming-up time and greatly increase production.

2. DOES THE TRAP *ACTUALLY* HAVE THE CAPACITY CLAIMED FOR IT? It is possible to unknowingly buy a trap with insufficient capacity. This limits production and wastes fuel. Armstrong trap capacities are very conservatively based on *actual* tests with hot condensate, and a liberal safety factor is recommended. If you follow Armstrong recommendations the traps will handle any condensate load that will be encountered.

3. IS THE TRAP SUITABLE FOR THE PRESSURE? A trap won't work satisfactorily at a steam pressure above that for which it is designed. (In switching traps from one location to another, be sure they are not put on a line with a pressure above their rating.)

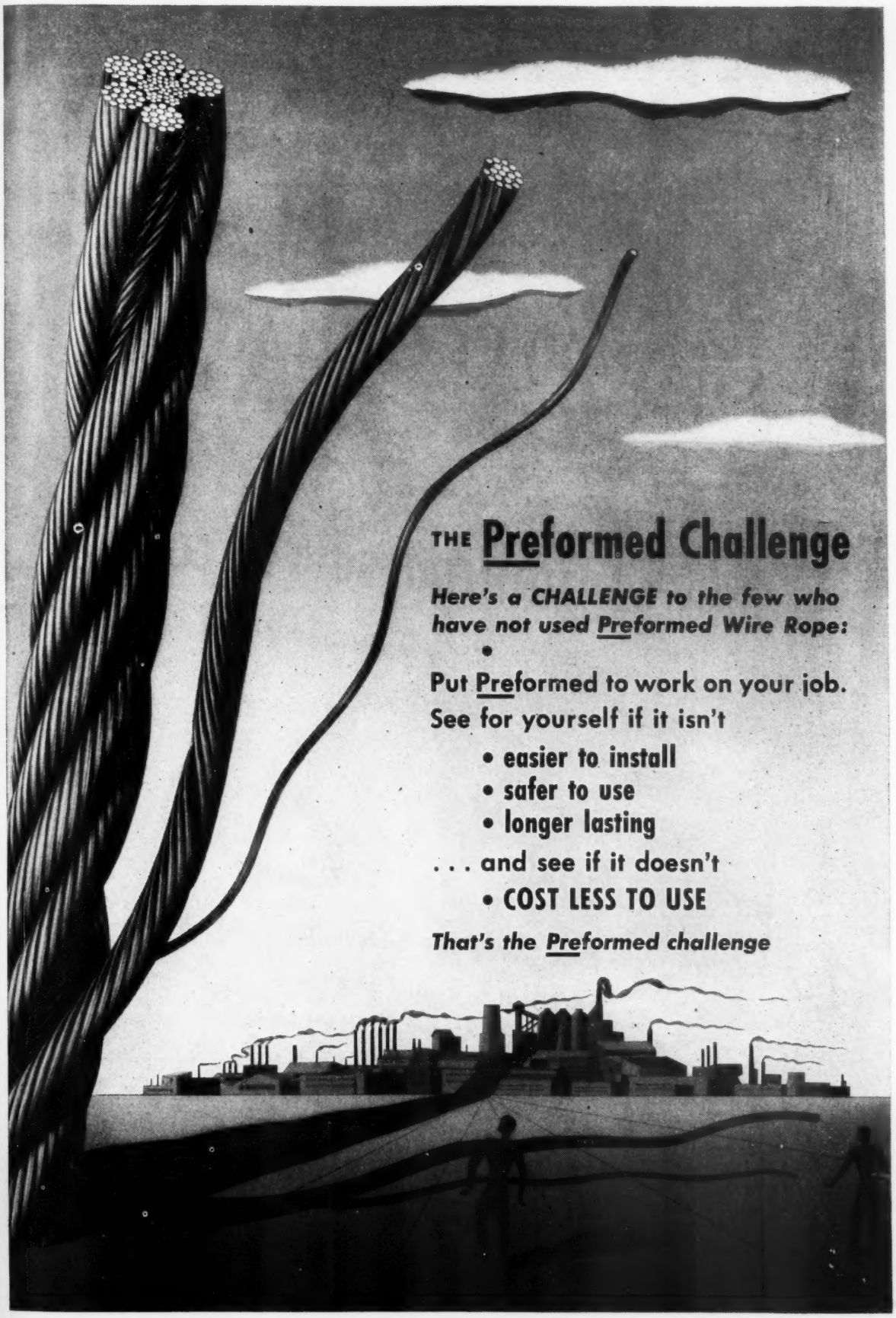
4. DOES THE TRAP HAVE ADEQUATE AIR-HANDLING CAPACITY? Air (always present in steam) reduces heat transfer efficiency, lowers temperatures and slows up production. Armstrong traps discharge all normal amounts of air along with condensate.

5. DOES THE BODY STYLE PERMIT THE MOST EFFICIENT INSTALLATION? Correct installation, essential to efficient trap performance, is simplified and reduced in cost by the choice of Armstrong trap body styles: No. 800 Series side inlet—side outlet; No. 801 Series side inlet—bottom outlet, and No. 200 Series bottom inlet—top outlet.

*The 36-page ARMSTRONG STEAM TRAP BOOK gives complete data on trap selection and installation on all classes of equipment. Send for your copy. ARMSTRONG MACHINE WORKS, 868 Maple Street, Three Rivers, Mich.

ARMSTRONG STEAM TRAP

ARMSTRONG *Inverted Bucket* STEAM TRAPS

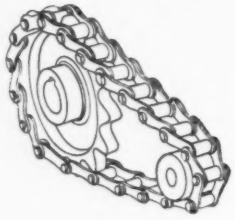

THE Preformed Challenge
Here's a CHALLENGE to the few who have not used Preformed Wire Rope:
•
Put Preformed to work on your job.
See for yourself if it isn't
• easier to install
• safer to use
• longer lasting
. . . and see if it doesn't
• COST LESS TO USE
That's the Preformed challenge

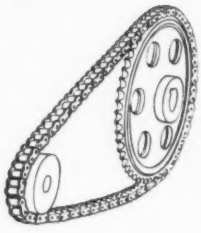
CHAIN BELT COMPANY

is pleased to announce
the appointment of

THE CONTINENTAL SUPPLY CO.

as another distributor for their
Oil Field Chains

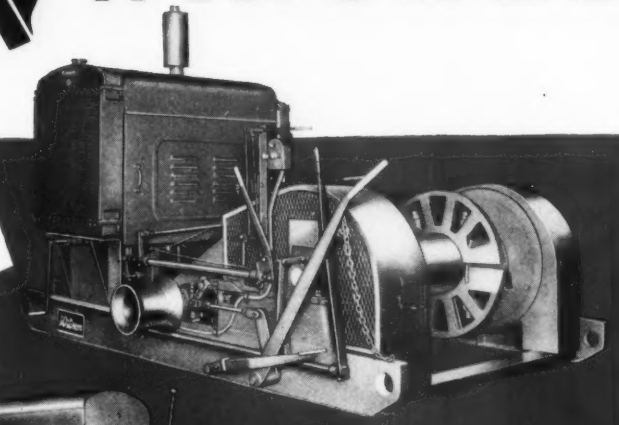




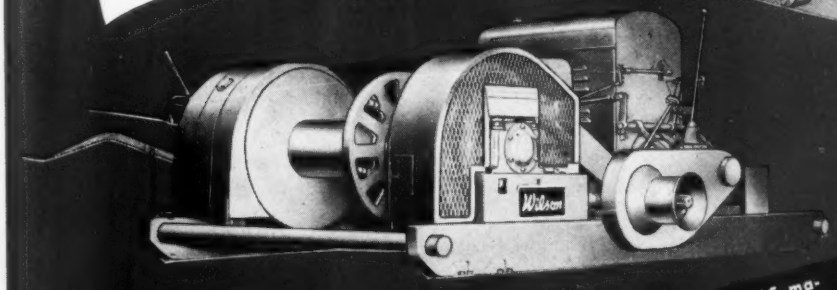
Both Rex A.P.I. Chains and Baldwin-Rex Roller Chains
will be available at all
THE CONTINENTAL SUPPLY CO.
Store Points.

Wilson WINCHES

For Lowest Cost Well Servicing



SUPER MODEL WINCH
Recommended for wells 3500 to 5000 feet. 2½" tubing.



SENIOR MODEL WINCH
Recommended for wells up to 3500 feet. 2½" tubing.

1. CAST, SEMI-STEEL BRAKE RINGS machined after assembly for true running braking surface
2. WILSON DISC TYPE FRICTION DRUM CLUTCH, or FREE ROLLING JAW CLUTCH DRUMS, optional
3. FULL HARDENED, DOUBLE STEP, REPLACEABLE JAW CLUTCHES
4. CAM OPERATED, FULLY EQUALIZED SELF-ENERGIZING BRAKES, OR FULL WRAP TYPE
5. ALLOY STEEL, DOUBLE HEAT TREATED SHAFTS, accurately ground to size
6. SPLINED SHAFTS wherever possible
7. HEAVY DRUM BARRELS, reinforced inside
8. DRUM ENDS REINFORCED WITH HEAVY "T" SECTION RIBS
9. DRUM BEARING BOLTS CLEAR THROUGH FRAME

Longer life, faster operation, more time on the job is what you get when your winch is a Wilson. Powerful, self-energizing brakes give instant response when needed. Jaw or friction clutches are optional, each the best of its type (Super and Mogul Models can be equipped with the Wilson Air-Tube Disc Clutch). Four or eight forward speeds and one or two reverse speeds make these winches flexible enough for all requirements . . . complete reinforcement gives unsurpassed strength and ability to withstand punishment.

ABOVE MODELS READY FOR DELIVERY FROM THESE POINTS

JACK ANDERSON ENGINE COMPANY, Kilgore, Texas
NORVELL-WILDER SUPPLY COMPANY, Houston, Texas
MID-CONTINENT SUPPLY COMPANY
Shreveport, La.; Wichita Falls, Texas; Odessa, Texas; Kilgore, Texas
AMERICAN SUPPLY COMPANY, Kilgore, Texas
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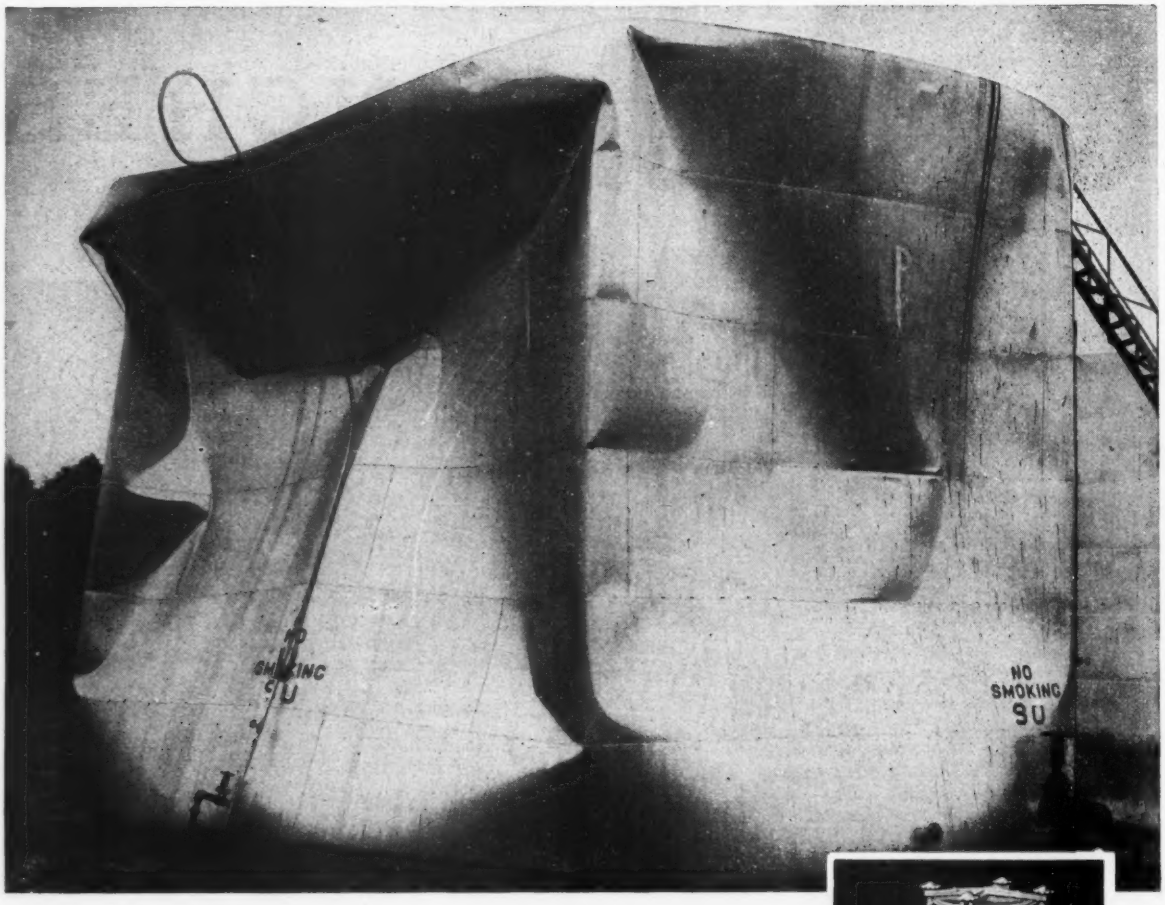

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It may take as little as two ounces of vacuum to collapse a standard cone roof tank, yet some operators minimize this consideration in selecting vent valves. Much emphasis is placed on pressure relief but the illustrated tank is evidence that *vacuum relief* is also a very important factor. Safeguarding your tanks against vacuum collapse is one of the jobs on which "VAREC" Engineers can help you. They have been designing and building venting equipment for various storage problems for over twenty years.

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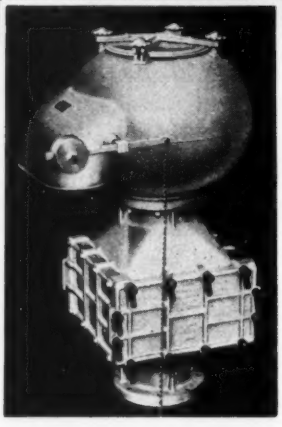

Figure No. 58A—"VAREC" Approved Conservation Vent Unit consisting of "VAREC" Vent Valve, Flame Arrester and Flame Snuffer.

P-3

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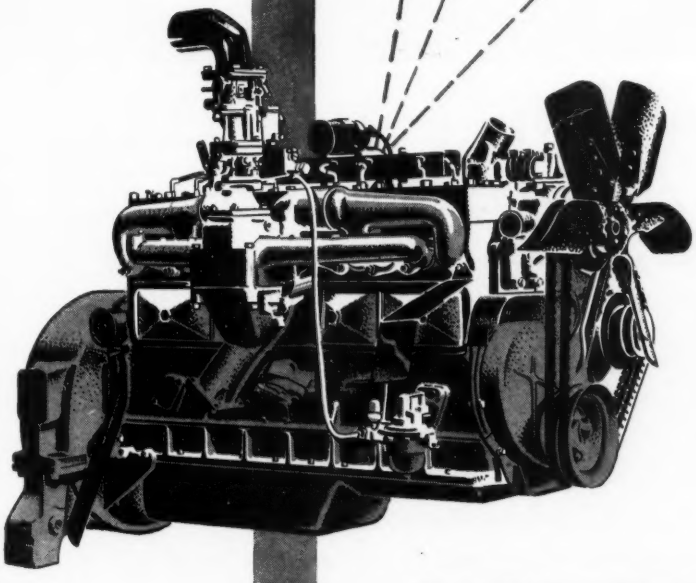

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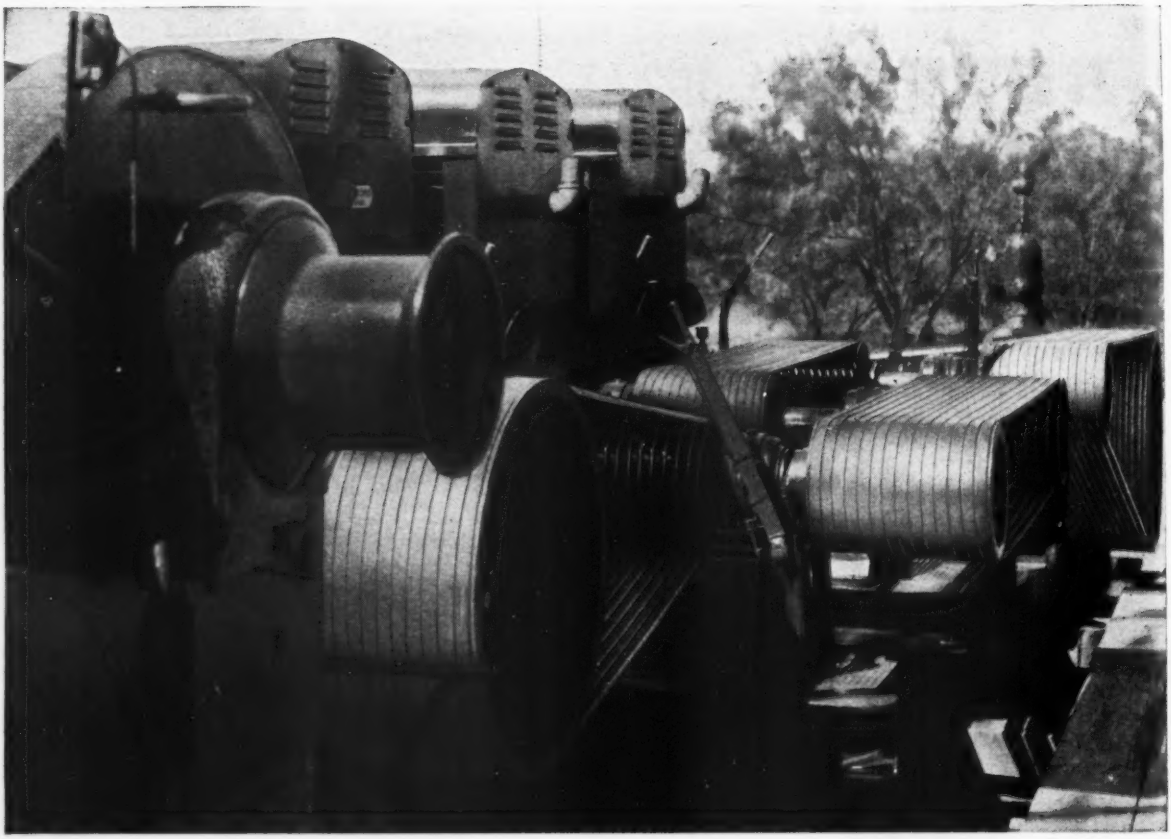

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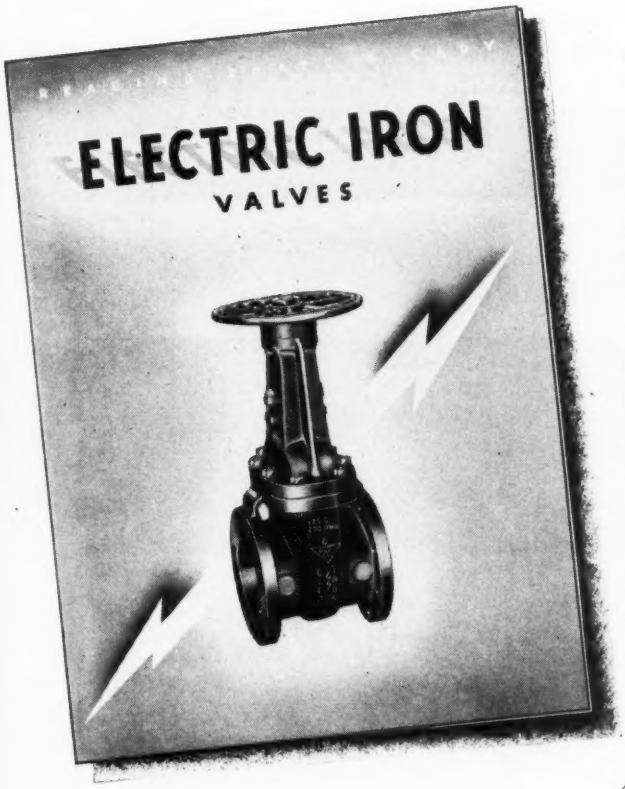

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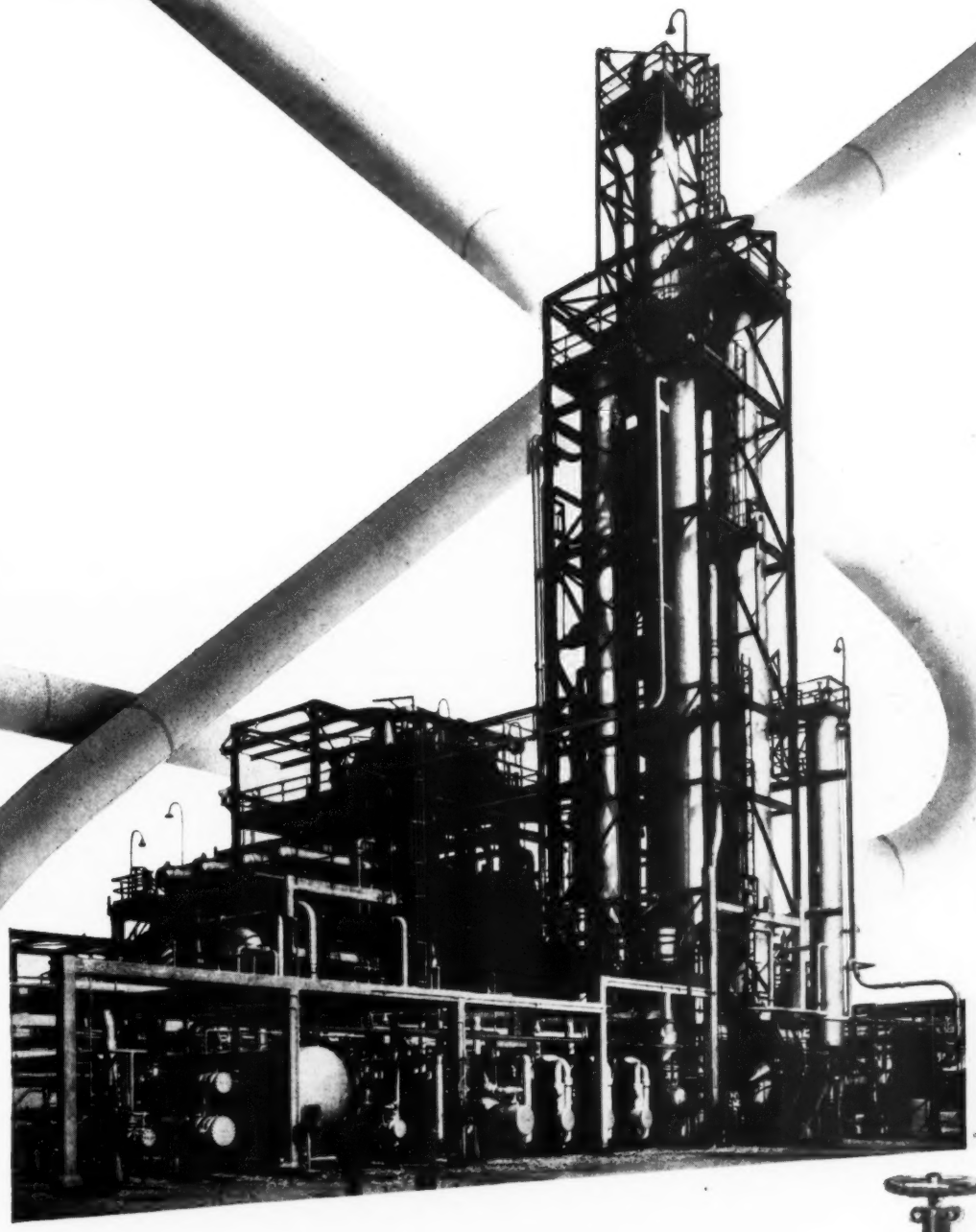

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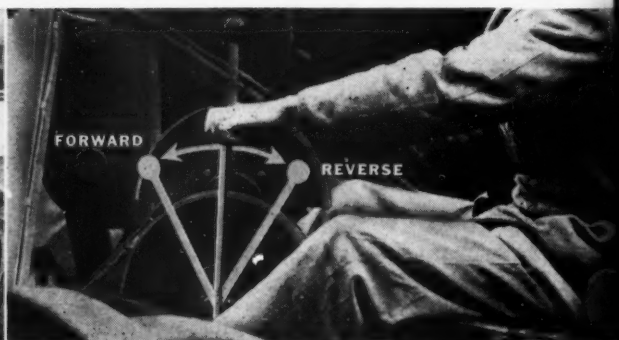

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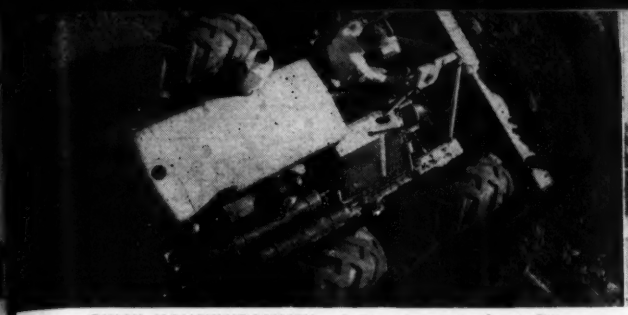

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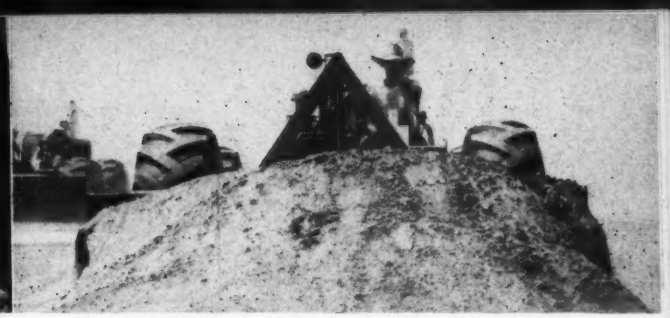
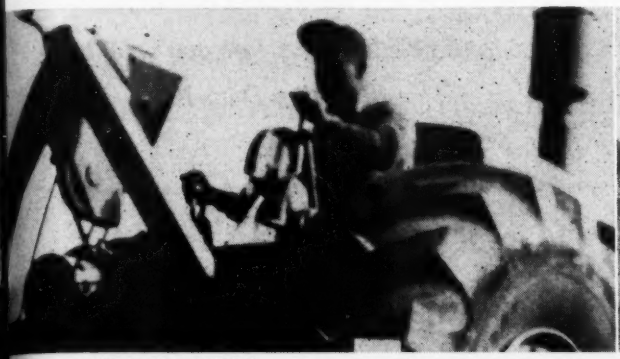


6 **BIG BOWL CAPACITY** — 11′2″ blade with bowl 3′7″ high fills fast, drifts a big 2½ yard load. Rolls dirt easily, holds well on sides for big pay loads. Blade quickly tilted to cut in on side hill or ditch.



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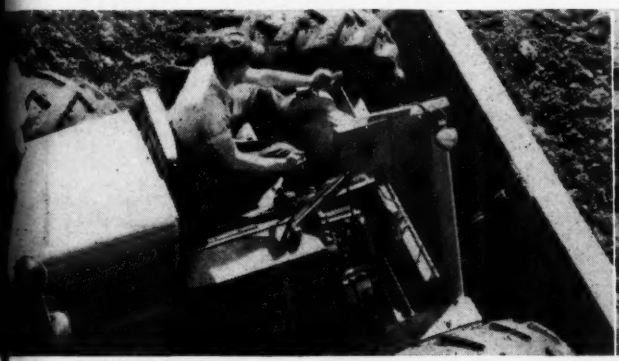

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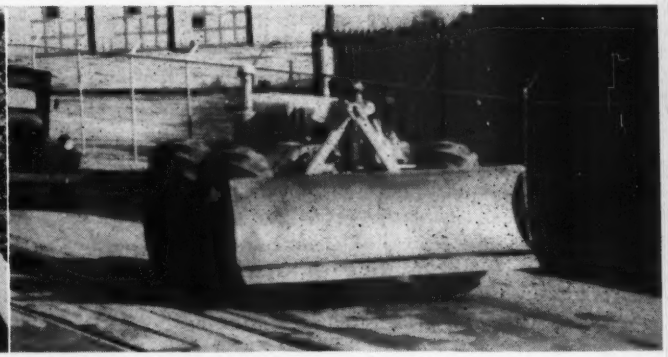

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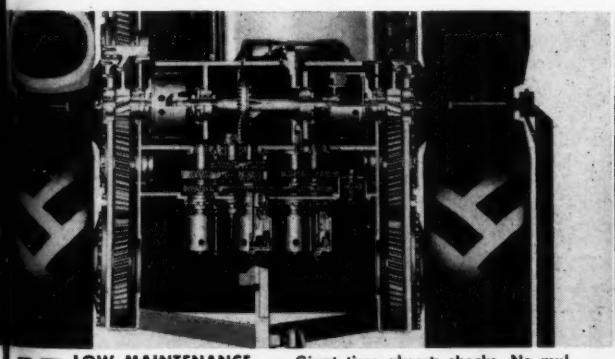

11 **LOW MAINTENANCE** — Giant tires absorb shocks. No multitude of moving parts constantly grinding in dirt. Dust-proof case encloses gears, shafts and bearings, operating in oil. Big "oversize" clutches, brakes.

12 **GETS MORE WORK DONE** — Dozes 2 or 3 cycles to crawler's 1. Makes push contact faster . . . loads faster. Makes job moves much faster . . . handles more assignments . . . utilizes waiting time to do odd jobs.

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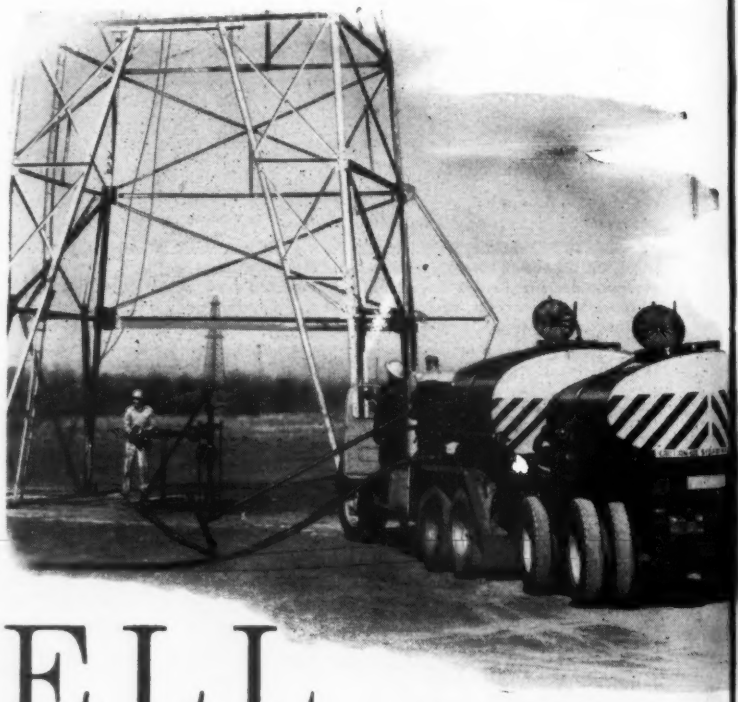

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Extraneous Issues

SCATTERED strikes at domestic refineries during 1946, 1947, and the first half of this year added to the burden the oil industry assumed in its efforts to arrive at a balance between supplies and rapidly increasing petroleum needs. Despite the readjustments in operations which the strikes necessitated and the losses in output, operators saw fit not to make an issue of the arbitrary actions of union leaders with the Washington investigators who were supposed to be checking all matters affecting oil supply and demand.

A more serious situation has developed in a strike at several plants now in its fourth week which despite the emergency actions of the California industry, has reduced refinery output in that key state approximately one-third. Supplementary supplies are being sent to the West Coast states from other refining areas. This disturbs the oil balance of these sections, and if long continued will not prevent shortages in one or more products in the Pacific states.

It is difficult to see what O.W.I.U. leadership in California expects to accomplish in bringing about this curtailment of refinery output. The same situation applies to refinery strikes under way in other parts of the country and those in effect over the past 2 years.

Long before the war and the postwar boom brought advances in wages to other industries, petroleum refining, according to Department of Labor statistics, moved into the lead rating in hourly and weekly pay for workers. It continues in that position among major manufacturers. Furthermore, the refining branch and the oil industry generally had led in employe insurance, retirements, working conditions, and continuity of employment.

Always operators have been willing to negotiate on a reasonable basis in those matters concerned with changes in the cost of living and conditions of employment as they have done in California.

But union leaders have insisted on the introduction of extraneous issues. They have laid themselves open to the charge of being more interested in expanding their own powers than in the welfare of the membership which they are supposed to represent.

Developments on the West Coast indicate that current policy has been influenced by outside unions which, because of their previous activities, have been discredited by the American public. There is reluctance by some union leaders to comply with all of the Taft-Hartley Act.

The remedy lies with the workers themselves. There is plenty of evidence that a majority resent the action of leaders who have brought suffering to them and their families. They should assert themselves in demanding new leadership before it is too late, to the end that they, through collective bargaining with management, will solidify their favorable employment position of long standing.

I. P. A. A. Applauds Crude Price Rise, Demands More Steel for Producers

by Dahl M. Duff

SAN ANTONIO, Tex.—A series of steps to improve the supply of steel products, and especially tubular goods, for the oil industry was recommended at the nineteenth annual meeting of the Independent Petroleum Association of America here this week.

The recommendations were contained in a report of the materials shortages committee headed by J. Ed Warren, Midland. It asked that the steel industry and the Department of Commerce take immediate action to allocate voluntarily sufficient steel to operate all pipe-making facilities at full capacity and to adopt distribution methods that would eliminate the gray market in pipe.

The resolution approved at the meeting was sharply critical of the steel industry for what it called its refusal to take advantage of existing opportunities to alleviate the tubular-goods shortage. It said the steel industry had been adamant against considering a voluntary agreement for tubular goods which constitute 75 per cent of the total steel requirements of the producing branch of the oil industry.

The more than 900 independent oil operators attending the meeting elected Fred W. Shield, San Antonio, as their new president succeeding Merle Becker, St. Louis, Mo., and chose Fort Worth for the 1949 annual meeting. D. R. Snow, Barnsdall Oil Co., Tulsa, was named treasurer succeeding N. T. Gilbert, Midstates Oil Co., Tulsa. New Orleans was picked for the association's midyear meeting early in May.

Shield Long Active

Shield is well known as an independent producer, royalty dealer, rancher, and horse breeder, having been in the oil business since 1926, chiefly in West Texas. He retired last year as president of the Texas Mid-Continent Oil and Gas Association, and for some years has been a director of both that group and the I.P.A.A.

News that Phillips Petroleum Co. had announced a 35-cent increase in the price for crude oil reached the I.P.A.A. meeting on the opening day. Association members were elated and declared the raise would further stimulate exploration and drilling.

The Phillips increase brings the top price for Mid-Continent crude oil to $3. The report of the I.P.A.A. economics and cost-study committee at the meeting here indicated an average price of $3.14 is now necessary to cover replacement costs.

The detailed study of this committee tabulated oil cost relationships for the last 10 years and asserted: "Petroleum prices are below the general level of prices in the United States and petroleum remains, as it has been for many years, one of the lowest items in the American consumer's budget."

The committee based its figures on the report of the old crude-oil industry advisory committee which found that a price of $1.99 was necessary in 1944 to cover replacement cost and normal prewar margin. Costs increases from 1944 to 1947 were 87 cents, with another over-all 10 per cent indicated in 1948. The I.P.A.A. committee pointed out that the present actual price averages $2.59. The Phillips raise, if it becomes general, would make this $2.94, 20 cents below the indicated 1948 replacement cost.

The report of the materials-shortage committee drew considerable interest. Besides calling for sufficient steel for pipe making and steps to eliminate the gray market, the committee also urged the steel industry and the Department of Commerce, by voluntary methods, to adopt a distribution plan that would make supplies available only for those certifying such goods are for use and not for storage or resale at premium prices, and to set up emergency stocks of materials for priority delivery to operators completing wildcats.

Other recommendations included: Action by Congress "making effective the intent of the export control laws" and preventing the exportation of "a disproportionate and inflationary share of the supply of scarce materials;" support of the Commerce Department's steel and iron scrap drive; action by the Secretary of the Interior referring to the National Petroleum Council the problems of shortages, exportation, and maldistribution of steel materials.

Among principal speakers at the meeting were:

Sen. George W. Malone of Nevada, who, refuting "oil-shortage theorists," declared that it is simply a physical impossibility for the country to run out of petroleum fuels except as a result of continued undue government interference.

Dr. Gustav Egloff, director of research, Universal Oil Products Co., who told the meeting that the nation can become self-sustained as to oil

(Continued on page 60)

FRED W. SHIELD
Elected president

MERLE BECKER
Outgoing president

Phillips Takes Lead in Raising Crude Prices, Citing High Costs

EFFECTIVE September 28 the Phillips Petroleum Co. announced from its Bartlesville, Okla., headquarters a 35-cent per barrel advance in all grades of crude oil which it purchases in Texas, Oklahoma, Kansas, and Arkansas.

The new schedule established a top price of $3.00 for Mid-Continent crude oil of 40° and above gravity. The same gravity grade in the Gulf Coast with the 35-cent advance would be posted at $3.23 and in West Texas, $2.87.

The advance was immediately met by the Southern Minerals Corp. which purchases approximately 35,000 bbl. daily in Southwest Texas fields. On Tuesday the Cooperative Refinery Association which refines 17,000 bbl. daily at its Phillipsburg and Coffeyville, Kans., refineries advanced to the Phillips schedule.

In announcing the increase, K. S. Adams, president of the Phillips company which has initiated other crude-oil advances in recent years, explained that the unprecedented civilian demand and the increasing military requirements for petroleum products have imposed upon the oil industry the obligation of making large capital expenditures. He also pointed to the inflated costs involved in finding, drilling, and producing additional crude oil with the most promising domestic areas at present located in offshore waters, deeper horizons, and remote locations where costs are exceptionally high.

Earnings Called Inflated

The Phillips head also said: "It should be recognized that published earnings of most oil companies are inflated because they are based upon selling crude oil and products which were acquired and developed at a much lower cost than the present replacement cost. The Phillips company contemplates retaining an increased portion of its 1948 earnings to provide for these high costs of replacement and additions to capital assets. However, under the presently inadequate federal income tax laws it is not possible for tax purposes to set aside out of current income a reserve sufficient to cover abnormal increases in the costs of replacing and adding to assets."

The Phillips company, which is a large producer and refiner and the largest manufacturer of natural gasoline and associated products, is a net buyer of crude oil. Its net crude production averaged 96,307 bbl. daily in 1947, with crude runs to stills of 91,776 bbl. daily. At the time its 1947 annual statement was released last spring the company explained that its net domestic production had increased to 105,000 bbl. daily. Its 1947 report only reflected for a short period the operations of Alamo Refining Co. (80 per cent owned by Phillips), with a refinery at Sweeney, Tex., now processing 35,000 bbl. of crude oil daily.

With increases in the operations at its Phillips, Tex., Okmulgee, Okla., and Kansas City, Kans., refineries it is estimated that refinery throughput of the Phillips refineries now exceed the company's net production by about 25,000 bbl. daily.

The company distributes its products throughout a large part of the Southwest, Middle West, and Rocky Mountain states. It operates a pipeline system from its Phillips, Tex., refinery to Chicago, Ill., via St. Louis, and is part owner of the Great Lakes Pipe Line Co. connecting southwestern refineries to several consuming centers in the Middle West.

The Phillips schedule represents the highest prices paid for crude oil in the Mid-Continent since the postwar boom period following World War I. In the Mid-Continent where flat prices were paid for crude oil, posted schedules advanced to $3.00 on January 8, 1920, and to a top price of $3.50 on March 1 of that year. This price continued in effect to January 24, 1921, when it was reduced to $3.00. The crude market declined rapidly that year dropping to $1.00 per barrel on June 16.

Some Producers Cautious

In San Antonio, Fred W. Shield, new president of Independent Petroleum Association of America, said he felt the new crude-price increase was "long overdue." The increase, he said, "is but a normal adjustment in a free economy," and oil prices still remain well below the general commodity index.

"This will also insure an even greater production of domestic oil, by making it economically feasible to operate secondary-recovery projects that could not have been operated before, and will also help finance marginal operations that would have been passed by," he said.

Independent producers attending the I.P.A.A. convention generally welcomed the increase but some commented that unfavorable political repercussions may follow. They recalled the congressional investigation of the steel industry's last price increase, and said the new crude raise must be explained and defended.

Other Views Expressed

Varying views were expressed within the industry regarding the Phillips advance. It was pointed out that both the crude oil and refinery markets are not as tight as they were earlier in the year or on December 6, 1947, when the last general advance of 50 cents per barrel was made effective in the southwestern states. Because of this market situation, doubt was expressed by some that the advance could be maintained if generally met at this time.

Following are some of the views expressed by large buyers of crude oil:

Atlantic Refining Co.: "While agreeing with the logic of Phillips stand relative to higher production costs, we are not certain the market will support the increase."

O. C. Shorp, president of Carter Oil Co.: "No justification exists for higher price postings at this time and so long as supplies are available to meet our company's requirements it has no intention of increasing the price at which it will purchase crude oil."

Hines H. Baker, president of Humble Oil & Refining Co.: "Humble does not consider an advance in crude oil prices required or warranted to meet demand at this time in view of the improved United States petroleum supply situation, a slackening in the rate of increase in demand, and the ability which the industry has demonstrated to meet current and anticipated demands. Domestic petroleum supply is now at record level. Additions to stocks of major products were at the rate of 450,000 bbl. per day in July and August and major products stocks on September 18 east of California were 38 million barrels, or 23 per cent, higher than a year ago. Along with this improvement in supply, there has been a slowing down in the growth of demand as indicated by the latest report of the Bureau of Mines which shows an increase in demand over the comparable period last year of only 3.3 per cent in July as compared with 6.7 per cent during the first half of this year. Humble does not intend to increase its crude oil prices unless it is forced to do so by a change in competitive conditions."

Lloyd Succeeds Baumel

AUSTIN.—Clark Lloyd, now director of production of the Texas Railroad Commission, is scheduled to take over Jack K. Baumel's duties as senior engineer late in November when Baumel begins his leave of absence to act as a consultant to the Venezuelan Government. Lloyd, an engineering graduate of the University of Texas, has been with the commission since 1932.

Pratt Tells NSRB War Oil Reserve Can Be Had by Curtailing Output

by Bertram F. Linz

WASHINGTON. — A recommendation that domestic oil production be cut back by 20 per cent to provide an underground petroleum stockpile to be drawn upon in the event of war has been laid before the National Security Resources Board by Wallace Pratt, former petroleum consultant to Board Chairman Arthur M. Hill.

Press reports on the recommendation suggested that the oil companies would be compensated for their lost production by being permitted to act jointly to increase prices with the Government guaranteeing them immunity from prosecution under the antitrust laws, but there appeared to be nothing in Pratt's statement substantiating that suggestion.

Pratt's lengthy report has not yet been laid before the NSRB by Chairman Hill, but copies, marked "confidential" have been transmitted to a number of interested agencies for consideration and comment. Unofficially, it was said in several quarters that the oil industry would find little to object to and much to commend in his recommendations.

The recommendation for the cutting back of domestic production was the only suggestion made by Pratt which has not been advanced in the past by oil men and government officials. His suggestion that production be limited to 20 per cent under MER would be made effective by action of the producing states. Oil to supply requirements above domestic production would be imported, under the plan.

Strong Industry Urged

Throughout his report, Pratt emphasized the necessity for stimulating a strong, progressive domestic oil industry and to do so, he declared, it must have adequate prices and a favorable tax climate.

Pratt considered the Western Hemisphere as a unit, so far as oil is concerned, and emphasized the necessity of encouraging increased production in Latin America as well as in the United States.

The basis of his report was that the United States should have available supplies in the ground adequate to meet military and civilian requirements in the event of an emergency, but at the same time he warned, rebutting arguments that peacetime consumption should be limited, that restriction of peacetime demand will inevitably result in restricted ability to produce in an emergency.

While suggesting that foreign oil be brought in to supplement domestic production, Pratt also called for control of exports to stimulate a vigorous domestic industry and placed as the first requirement for that vigor an adequate supply of steel and other necessary materials.

The report divides its recommendations into three groups, one for immediate application, a second for the "middle-range" and the third going beyond 1960, when it is anticipated a synthetic liquid-fuels industry will be assuming importance.

For the immediate future, Pratt recommended that imports from the Middle East be stepped up, that other fuels be substituted for oil for space heating and steam generation, and that production in Latin America be expanded. In the event of war, he pointed out, the United States should be able to depend upon its own oil and that of Latin America, and to that end should act now to see that fields be discovered and developed by private industry.

Shift Back to Coal

Among the recommendations for the "middle range" period, Pratt suggested the development of a synthetic liquid-fuels industry, and the expansion of Middle East production to eliminate the drain on Western Hemisphere resources by Europe.

Pratt emphasized the desirability of reestablishing coal as a major fuel wherever it can be used instead of oil. Higher prices for liquid fuels, he said, would do much to accomplish this automatically. Nowhere in his report does he appear to have recommended any direct action by the Government which would interfere in any way with the present freedom of operation of the oil industry.

There was nothing in the report to indicate what pressure could be brought to bear on the producing states to take the action necessary to reduce production to 80 per cent of MER; what compensation, if any, could be offered for the consequent loss of revenue in states having severance taxes; or what would happen to small independent producers if their allowables were cut back. In some quarters, the suggestion is considered as merely an idea to be thought about, rather than something to be immediately attempted.

National Security Resources Board officials declined to comment on the report, which they are trying to hold strictly confidential, but Pratt, himself, is reported to consider his work more as a one-man advisory statement reviewing possible sourses of action than a formal report laying down a definite policy.

New Mexico May Abolish Discovery Well Allowable

HOUSTON.—The New Mexico Oil Conservation Commission has asked for expressions of opinion from operators in the state on the question of elimination of the bonus discovery allowable.

R. R. Spurrier, secretary-director of the commission in Santa Fe, in a letter to operators in the state said: "The bonus allowable has recently been the subject of contest in an open hearing and this brought the remark from several operators that it probably would be better to eliminate it altogether."

"If no objections are received, or if very few objections are received to the proposal, the commission will call a hearing at which time the bonus allowable will be up for elimination. If there are many letters received in this office by those who wish to retain the bonus allowable, then it will be let alone for the commission does not in any way wish to interfere with exploration and development of oil and gas in New Mexico."

The bonus allowable permits a discovery well of 5,000 ft. depth to produce an extra 25,000 bbl. of oil annually for 2 years after it is brought in. The order was promulgated during the war to encourage wildcat drilling, and in his letter, Spurrier pointed out that the price of oil then was little or no encouragement for exploration or even development.

The allowable bonus, which is over and above the normal top unit allowable, is given to discoveries of new pools or horizons or extensions of fields 2 miles or more distant. The amount of the bonus is on a scale increasing in depth with wells 1,000 ft. and under given 5,000 bbl. more a year and wells below 4,000 ft. receiving 5 bbl. per foot of depth.

Lease Renewal Date Set

AUSTIN.—The General Land Office announced last week that October 1 is the deadline for filing applications for extension of state term leases.

Extension of the former 25-year leases was authorized by action of the last Texas legislature. Under certain conditions the term leases can be extended for as long as commercial production is maintained.

this week

PRICES—Phillips Petroleum Co. posts increase of 35 cents per barrel in crude price. . . . Industry caught by surprise. . . . Some small purchasers meet price increase immediately. . . . Most large buyers deferring announcement of their course of action. . . .

OUTLOOK—Stocks of distillate fuels now at all-time high. . . . Reach peak 6 weeks ahead of normal. . . . Difficult storage problems may face industry. . . . ¶Egloff tells I.P.A.A. petroleum reserves of this country will last 100 years. . . . Other liquid-fuel sources 2,000 years. . . . ¶Security Board studying recommendation to cut back domestic production to provide war stockpile. . . . Subject to much industry discussion. . . .

MEETINGS—I.P.A.A. elects new officers at annual meeting in San Antonio. . . . ¶A.S.M.E. announces heavy schedule for annual petroleum conference. . . . ¶Wrather making annual tour of A.I.M.E. districts. . . . ¶Texas section of A.A.P.G. going to Mexico City. . . . ¶Many other associations active as fall meeting period gets under way. . . .

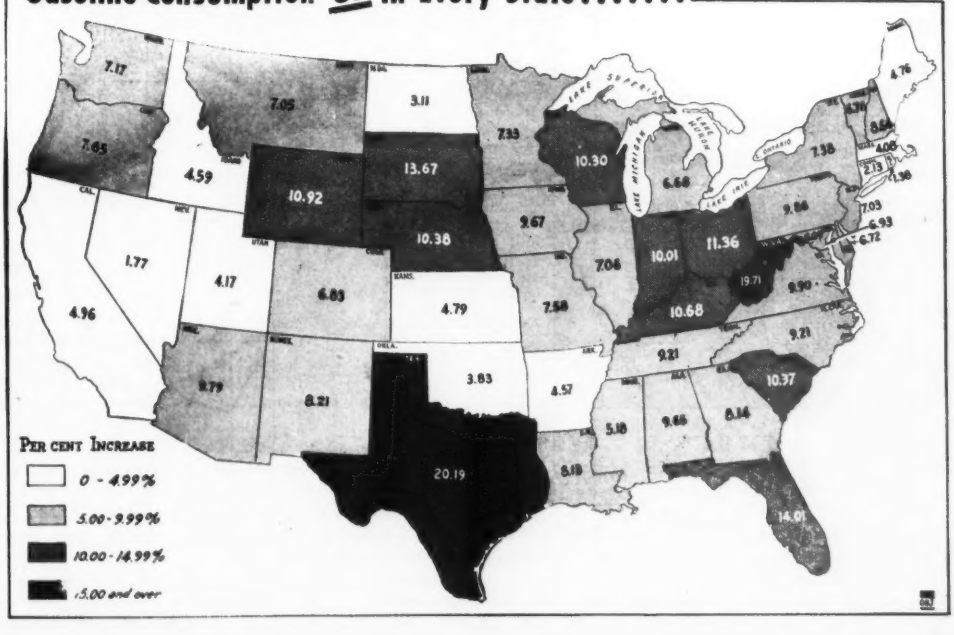
PIPE LINES—Construction gets under way on the 63-mile, 26-in., Lulu, Miss.-Memphis, Tenn., section of Texas Gas Transmission Corp.'s 840-mile Texas-Ohio line. . . . ¶Kuwait Oil Co. is laying 600-mile, 4 to 30-in. line in Kuwait. . . . ¶Texas Pipe Line Co. begins taking up and reconditioning 140 miles of pipe between Humble and Port Arthur, Tex. . . . ¶War Assets Administration asks for bids on 45-mile pipe line in Pampa-Borger area of Texas Panhandle. . . .

INTERNATIONAL—Hungarian Government expels two Standard Oil Co. (N. J.) affiliate officials. . . . Allege "sabotaging" MAORT crude-oil production. . . . ¶Proposed Cartagena refinery, first in metropolitan Spain, will relieve rationing and excessive high prices there. . . . California-Texas Oil Co., Ltd., to have 24 per cent interest. . . . ¶Middle East investment by American and British capital will total nearly 2 billion dollars in next 5 years. . . . ¶Large Tucupido area in Venezuela may prove another major Latin American oil field. . . .

PRODUCTION—Plans for more offshore drilling near Galveston Harbor meet opposition from navigation interests. . . . ¶Louisiana establishes special allowable scale for offshore wells. . . . ¶New Mexico may abolish wartime discovery bonus allowable. . . . ¶Texas portion of Hugoton gas field put under proration by Railroad Commission. . . .

TRENDS—Well completions totaling 841 for week ended September 25 set a new record. . . . Previous high was 835 for week ended August 7. . . . ¶Crude-oil production for week ended September 25 was 4,621,445 bbl. daily (excluding California). . . . The fourth consecutive all-time record for production east of California. . . . ¶Indiana, Kansas, and Wyoming recorded new highs in production for the year during week ended September 25. . . . ¶Stocks of the four major products east of California for week ended September 18 totaled 3,140,000 bbl. . . . Gasoline showed only decline, dropping 874,000 bbl. from previous week's level. . . .

Gasoline Consumption UP In Every State.....



PUZZLE: Find the trend. With the touring season over, the industry is studying figures on gasoline consumption to determine trends. This map shows the percentage increase during the first 6 months of this year as compared with last. A pattern is difficult to find. Military purchases and differences in farm use may account for some states which seem out of line with their neighbors

Stocks at All-Time High Early in Season Pose Storage Problem

by John C. Casper

STOCKS of distillate fuels held at refineries and primary terminals are at an all-time high, 6 weeks earlier than the usual seasonal peak, except in California where the situation is confused by the refinery strike, thus confronting the industry with a difficult storage problem.

Distillate stocks east of California reached the record total of 59,567,000 bbl. on September 18, whereas normally these stocks continue to build up until around the end of October. The expected winter demand requires that stocks continue to rise until the heating season gets well under way, but some refiners and distributors already are having trouble finding places to put the product.

Reports on the inventories in California are not available because of the strike. Since the demand for distillate and diesel fuels in that area were running about 700,000 bbl. per week at the time the strike started, the decline in distillate stocks has been probably no more than 1,500,000 bbl. in the 2 weeks when no figures were available. This would mean that distillate stocks for the country, even including California, are at a new all time high.

The big problem facing some refiners and distributors is one of storage. Where will they put this excess production for the next 6 weeks? The situation is very much like the small boy trying to eat a large watermelon—"not too much melon, just not enough boy." We don't have too much distillate fuel oil, but some refiners may have trouble finding storage for all they can produce.

The areas where empty storage is scarcest include the Oklahoma-Kansas and Illinois-Indiana refinery districts. Distillate stocks in the Oklahoma-Kansas district on September 18 amounted to 6,096,000 bbl. compared with a previous high of 3,709,000 bbl. on November 30, 1947. In the Illinois-Indiana district, distillate stocks are now 11,623,000 bbl. compared with 9,294,000 bbl. at the end of November last year. For the areas made up from the above two districts, distillate stocks are currently 36 per cent above last year's which was not reached until the end of November.

While considerable product storage has been added in these two districts, the big percentage gain in stocks indicates that the operators of refineries in these areas will have to hunt for space to hold the extra distillate produced during the next 6 weeks.

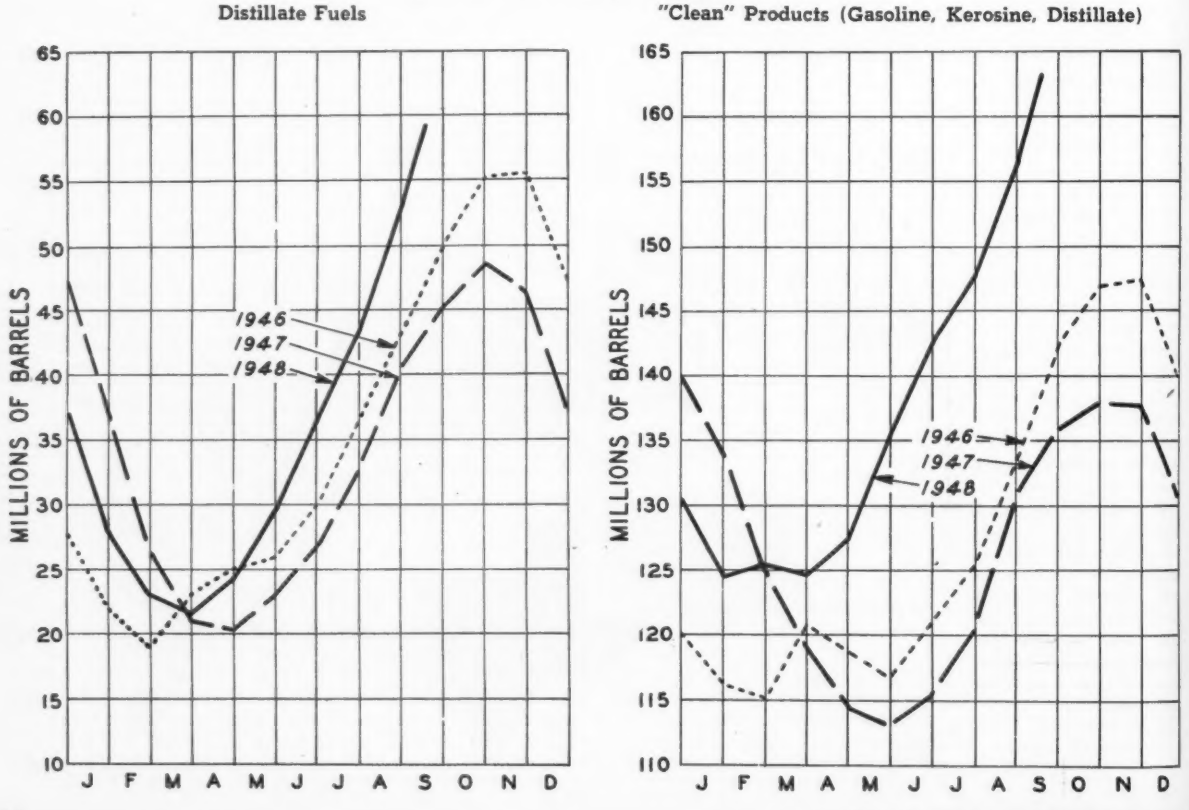
Distillate inventories in the East Coast are now at 22,830,000 bbl., which is above the highest stock level of last year but not up to the 24,182,000 bbl. on hand at the end of October 1946.

Gasoline a Factor

Some available space is indicated for the Texas Gulf Coast district where current stocks are 10,863,000 bbl. compared with the previous peak of 13,829,000 bbl. on November 30, 1946. If the California strike continues for some time, there may be some Gulf-West Coast tanker movements of distillate which would leave still more space available in the Texas Gulf district.

The storage problem is further complicated by the fact that we have come to the end of the season of high gasoline demand with about 9,000,000

Stocks East of California



bbl. more motor fuel than last year and about 8,000,000 bbl. more than the year before.

To get a better picture of the storage problem, it is necessary to consider total inventories of clean products, made up of gasoline, kerosine, and distillate. Currently, the stocks of these products total 163,380,000 bbl. compared with 137,746,000 bbl. at the end of last October and 147,469,000 bbl. at the end of November 1946. These were the high points for the past 2 years. On a basis of corresponding dates in the past 2 years, current inventories of clean products are about 29,000,000 bbl., or 21 per cent, above last year and 25,000,000 bbl. or 18 per cent, above stocks at this time in 1946.

If crude runs continue at a high level for the next 6 weeks, the refiners' problem may be a general lack of clean storage. Any shift of refinery yields resulting in a lowering of distillate production will not help the situation since it would mean an increase in gasoline which would also require clean storage. On the other hand, if the refiner has any clean storage available it will be desirable to use a large part of it for distillate fuels since this is the product that will move as soon as the heating season starts.

There are two principal reasons for the storage situation that is developing this year. First and most important, storage capacities have not increased proportionately with the demand for petroleum products. Some new clean-product storage has been added since the end of the war, but domestic demand has increased until sales this year will be about 45 per cent above 1941.

The second reason is the change that has taken place in seasonal demands, resulting in greater stock changes. In the past, the summer half of the year was the time of highest refinery activity and also the period of highest total demand, but this has been changing since the middle thirties. Since the end of the war, this shift has become more evident and this year the demand in the winter quarters will be about 8 per cent greater than that in the summer quarters.

As long as refineries must be operated so near capacity in order to supply the demand, a larger portion of the winter-time requirements must come from stocks that have been piled up during the summer. All of this adds up to a need for additional storage to care for the stocks that will be on hand just before the start of the heating season.

California Oil Strike Negotations Suspended; Distribution Improving

LOS ANGELES.—Negotiations have been adjourned indefinitely in the California oil workers strike following a meeting September 24 at El Segundo between Standard Oil Co. of California and C.I.O. union officials. Either side may call a meeting at any time, however.

Gasoline supplies in the West Coast states continue to be plentiful as most refineries have resumed operation and are at near normal capacity. Standard Oil Co. refineries have never ceased operation and Union Oil Co., Shell Oil Co., Inc., and Richfield Oil Corp. have all resumed operations following a short shut-down period. General Petroleum Corp. and independent refineries were not involved in the strike.

Total refining capacity on the West Coast currently is approximately two-thirds normal capacity, with 650,000 to 700,000 bbl. of crude daily being processed. Only one grade of gasoline is being manufactured, however, and manufacture of several products has been halted temporarily. Picketing at bulk plants has eased up and gasoline is trucked out of these points daily without difficulty. Picketing still continues at the refineries, however, and gasoline and products must be moved out of the refineries to the bulk plants or marine terminals through pipe lines.

To prevent serious shortage and hardships a rationing program has been set up by the allocation board appointed by the various companies involved in the strike. Under this program industrial and municipal fleets are given 100 per cent of their requirements, while service stations supplying the general public are given 75 per cent of their actual July gallonage. Since demands during the latter months of the year are generally much lower than demands during July, it is anticipated that the average motorist will continue to be able to purchase all the gasoline he needs.

Union Charges Conspiracy

O. A. Knight, president of the striking Oil Workers International Union, accused the major companies of violating the antitrust laws by combining to fix wages and prices.

He wired President Truman asking prosecution, declaring that the major companies in California several months ago uniformly and successively increased the prices of products and now they uniformly refuse to bargain with their employes for any wage increase beyond 12½ cents an hour. As evidence he cited newspaper advertisements published jointly by several companies stating their concerted position in opposition to the union's wage demand. The wire declared that several companies would be willing to bargain with the union except for their fear of retaliation from the majors.

An independent union, covering field, pipe line, automotive and purchasing department employes, last week signed an agreement with Union Oil Co. providing a wage increase of 12½ cents an hour, the figure offered the O.W.I.U. by the refinery operators.

Industry Watching

Reports of local shortages persist in some areas, while other communities in the western states are advising tourists that there are ample supplies of gasoline and that there is no price profiteering. In the Northwest, allocations of gasoline to filling stations were increased 20 per cent last week as the supply situation eased in that area.

Oil men throughout the country are watching the West Coast situation closely because of its possible effects on supply and market conditions elsewhere. Even though California refinery operations are back to about two-thirds of their normal level, a considerable volume of supplies is being drawn from the Gulf Coast and Mid-Continent areas by tanker and rail to make up the deficit.

With the supply and demand situation in such close balance throughout most of the United States, a heavy shifting of products to the West Coast might upset the industry's calculations for meeting the winter demands. Already independent jobbers in the Mid-Continent declare that spot prices are stiffening as a result of the California strike.

Texas Approves Injection And Vacuum Applications

AUSTIN.—Reno Oil Co. has been authorized by the Texas Railroad Commission to conduct pressure-maintenance operations in the Gunsite sand reservoir underlying its Campbell C lease, Young County Regular field, Young County, Texas. The company proposed to inject gas into its Campbell C 7 well.

Other commission orders included a permit to Chass Production Co. to use a vacuum on two of its wells in Holzmark field, Bee County. The commission found that the company's two wells were the only two producing from the Hockley sand at about 3,500 ft. in this field and that there is insufficient gas and no suitable water in quantity for repressuring.

WORLD-WIDE OIL DEVELOPMENTS

Caltex Will Share in Cartagena Refinery; To Be First in Spain

SPAIN'S serious shortage of petroleum products, which has caused rationing and exceedingly high prices, should be somewhat relieved with completion of the refinery planned for construction at Cartagena, a southern port on the Mediterranean.

This will be the only complete refining plant in metropolitan Spain, though there is a topping plant at Barcelona with a capacity of 700 bbl. per day. The Cartagena refinery will have a daily capacity of between 15,000 and 20,000 bbl., and presumably will run on Middle East crude. Wildcatting operations are in progress in northern Spain but without success to date, and there is no indigenous production except a small amount of shale oil.

California-Texas Oil Co., Ltd., will have a 24-per cent interest in the projected Cartagena refinery. Cia. Espanola de Petroleos, S.A., which runs a 12,000-bbl. daily refinery at Santa Cruz de Tenerife in the Canary Islands, will also hold a 24 per cent interest, with the remaining 52 per cent being held by the Institute Nacional de Industria, a Spanish Government corporation. Cia. Espanola, known as CEPSA, is reported to be planning a 5,000-bbl. daily expansion of the Santa Cruz plant which would bring the daily output there to 17,000 bbl. daily.

To Use Arabian Crude

Crude oil for the Cartagena plant probably will come from Saudi Arabia and Bahrein Island. Some storage now exists at Cartagena but it is believed that this capacity will be enlarged.

Construction of the Cartagena refinery will not change the distribution monopoly which is held by Cia. Arrendataria del Monopolio de Petroleos, S.A., known as CAMPSA, according to well-informed sources. CAMPSA will purchase the output of the Cartagena refinery and obtain additional petroleum products from outside sources.

A few months ago reports from Madrid indicated that CAMPSA's continued existence was a jeopardy. CAMPSA officials were said to have told the Government that the 20-year contract which was initiated in 1928 had been seriously handicapped because of Spain's civil war and later by World War II. Therefore, it was held, CAMPSA had been denied a full opportunity of developing its distribution facilities. A 5-year extension was requested.

Last August the Petroleum Press Service reported that CAMPSA's representations did not appear to have fallen on sympathetic soil for a new law, while providing for the indefinite continuation of CAMPSA as the Government's distribution organization, imposed a considerable reduction in its remuneration.

Consumption Very Low

The immediate effect of the changes will be a considerable change in CAMPSA's total income, it was pointed out. The new law provides for the Government to acquire, on a prescribed basis of valuation, CAMPSA's shares from those holders wishing to dispose of them, and for the Government to resell them on the Madrid stock exchange.

Both the volume of trade and the earnings of CAMPSA reached record levels in 1946. The company's turnover was considerably inflated, however, by gross receipts from restrictive taxes on gasoline consumption—which have since been abandoned—and by the removal of any control upon the sale of petroleum products, except fuel oil which, as of late last year, remained under official control.

CAMPSA's large earnings also reflected the high selling price of gasoline ($1.70 per gallon last year) and other products which are among the most expensive, if not the most expensive, in Europe and elsewhere. This high level of prices has had a retarding effect upon Spain's economic recovery and unquestionably this was a prime motive for seeking the construction of a refinery within Spain's borders.

Spain is also faced with a shortage of coal and railroad cars as well as inadequate tanker facilities. Moreover, that country's chronic shortage of foreign exchange makes the problem more acute. The fact that Caltex will provide for 24 per cent of the construction costs and make crude oil available from the Middle East must be a welcome factor for the Spanish treasury. Then, there is the most important factor that Caltex will provide the know-how and has fairly ready access to the necessary construction materials in other countries.

Company Withholds Comment

While the Caltex office in New York declined to comment on the report from Madrid, it is understood that the Cartagena refinery will not in any manner be linked to the Mediterranean Refining Co., a project in which Caltex and Socony-Vacuum Oil Co., Inc., hold joint ownership. However, construction of the projected Cartagena refinery is another indication of the stepped-up activity which Caltex refinery interests are taking in Europe and the Middle East. Earlier this year it was confirmed that the Mediterranean Refining Co. plans construction of a 75,000 bbl. daily plant at Sidon, Lebanon, the projected terminus of the Trans-Arabian pipe line from Saudi Arabia. And last year Caltex announced plans for a 20,000 bbl. daily refinery at Pernis, just outside of Rotterdam, Holland.

Increasing demands for all petroleum products forced the Spanish Government to reestablish a rationing program late last summer. These restrictions eventually were extended to limit the operation of private automobiles to 3 or 4 days a week, depending on horsepower.

Receipts of petroleum products in peninsular Spain, according to the best obtainable estimates, were only a little more than 2 per cent lower in 1947 than in 1946, the figures being about 6,854,000 bbl. for 1946 and around 6,700,000 bbl. for 1947. Of this

quantity, roughly 1,390,000 bbl. in 1946 and 1,600,000 bbl. in 1947 were received from the CEPSA refinery at Tenerife (Canary Islands), which in turn imported its crude oil from foreign sources.

Automotive gasoline receipts were about 3,180,000 bbl. in 1947 as compared with about 3,280,000 bbl. in 1946. During the latter part of the year independent importers of branded lubricating oil, which has been the only petroleum product which could be imported outside the control of the Spanish petroleum monopoly, encountered severe difficulties in obtaining dollar exchange.

Capacity Badly Needed

The current annual capacity of CEPSA's Tenerife refinery runs at about the following rates: lubricating oil, 140,000 bbl.; paraffin, 17,300 bbl.; gasoline, 1,912,500 bbl.; kerosine, 356,500 bbl.; heavy oil, 799,200 bbl.; fuel oil, 1,498,500 bbl.; and asphalt, 297,000 bbl. This is a total of 5,021,000 bbl. annually, or around 13,700 bbl. daily. The rated capacity is generally given as 12,000 bbl. daily, and as already stated, it is planned to increase this by 5,000 bbl. daily.

Indicative of the fact that CEPSA recognized the need for additional refinery capacity in metropolitan Spain, as well as at Tenerife, is that last year the Government-created Institute Nacional de Industria, known as INI, agreed to finance a refinery at Cartagena. However, these plans were delayed because of inability to obtain equipment.

Spain's indigenous oil is currently limited to a negligible quantity produced from shale. The production of petroleum substitutes at the Puertollano shale-oil plant for 1946 and 1947, according to the Direccion General de Minas y Combustibles, was as follows (in barrels):

	1946	1947
Gasoline	9,724	6,172
Fuel oil	6,547	20,911
Lubricants	1,742	1,357
Creosote	20,724	1,719
Paraffin wax	681	811
Total	39,418	30,970

Currently Socony-Vacuum Oil Co., Inc., has a 50 per cent interest with CEPSA in a wildcat drilling operation in the province of Lerida, in northeastern Spain on the Segre River. Solsona, the nearest town, is about 15 miles to the east.

A test on the Olianao structure, according to latest reports, was down to 7,622 ft. An authoritative spokesman explained that it has not yet been determined how deep the test will be drilled.

The Olianao structure is an anticline exposing Eocene outcrops. Located here in Lerida is CEPSA's largest concession. It covers 9,320 hectares (about 23,300 acres). Preliminary plans called for a deep test going through to the Tertiary.

Late last year, Don Agustin Marin Bertran de Lis, a Spanish geologist, said there is evidence in Catalonia and Castille that there are small petroleum deposits in these areas which could be developed to solve some of Spain's petroleum shortage difficulties.

Hungary Ousts American Officials of MAORT, Charging Sabotage of Fields

ANOTHER step by the Communist-dominated Hungarian Government to take over all oil activities within its border came to light early this past week when two officials of the Standard Oil Co. (N. J.) affiliate there were arrested for allegedly "sabotaging" the company's crude-oil production.

The two arrested were Paul Ruedemann and George Bannetine. Ruedemann is president of Magyar Amerikai Olajipari Reszvenytarsagg, commonly known as MAORT, as well as the shareholder's representative, and Bannetine is a director.

The two Americans were expelled from Hungary by the Minister of Interior September 26 after being held in custody since September 18.

A Hungarian Government spokesman said that MAORT had been under investigation for some time because of steadily falling production. MAORT's oil fields were seized by the Russians in the spring of 1945 and they have retained control since then despite protests by the U. S. Department of State.

MAORT's officials last year were accused by the Russians of overproducing the fields to such an extent that $25,000,000 in damages had resulted. But as a matter of fact, well-informed sources point out, the Russians set a minimum production so high that the fields have already suffered irreparable damage. When the decree to produce this minimum was issued a year ago last August, Ruedemann said that the fields would be ruined long before their time.

Officials of Standard Oil Co. (N.J.) in New York stated emphatically that no action of sabotage or acts in any way harmful to the development of the Hungarian oil industry could be involved.

Jersey Standard pointed out that since reassuming ownership of property following the Russian occupation of Hungary, MAORT, whose affairs have been directed from the local offices in Hungary, has had little opportunity to operate the properties. Actually, since ownership was restored, state controls have practically eliminated management's independent action in either the operation or commercial aspects of the Hungarian company's business. Jersey Standard's sole function with respect to MAORT has been furnishing advice concerning efficient and effective development of the Hungarian oil resources.

International

WORLD-WIDE OIL DEVELOPMENTS

Romanian Protest Over Export Denial Rebuffed

THE administration is definitely adhering to its policy of prohibiting the export of oil equipment to countries east of the "Iron Curtain," it is evident from the action on a Romanian application.

Romania made a contract with International Derrick & Equipment Co. calling for the delivery of $9,500,000 of equipment. On this contract the American company actually loaded on shipboard $1,500,000 worth before March 1.

On March 1, the administration announced a policy of refusing to approve export licenses for the shipment overseas of all scarce machinery and materials to countries within the Russian orbit. Hence all of Romania's remaining $8,000,000 under the contract was refused an export license by Commerce Department.

This belated information came to light when the State Department confirmed that Romania had protested the holding up of the delivery of the balance of the $8,000,000 worth of equipment, and that the State Department had rejected the Romanian protest.

Aramco Reports Production Refinery Runs for August

Arabian American Oil Co. reports that its August crude-oil production amounted to 13,110,349 bbl. of approximately 422,914 bbl. daily. Crude oil processed at Saudi Arabia's Ras Tanura refinery amounted to 3,925,339 bbl., or about 126,624 bbl. daily.

Crude-oil production for the first 8 months of 1948 totaled 86,177,922 bbl., or about 355,188 bbl. daily. The Ras Tanura refinery runs for the same period reached 29,809,383 bbl., or approximately 122,170 bbl. daily.

Facilities Proposed for Middle East Oil Will Benefit Local Economies

by Warren W. Burns

NEARLY 2 billion dollars of American and British capital will be invested in petroleum facilities in the Middle East during the next 5 years if oil development there is permitted to proceed as planned, it is stated in a research study just completed for Arabian American Oil Co.

This will not only permit upwards of 1,500,000 bbl. of oil daily to move to Europe and other consuming areas to the west but will give the peoples of the Middle East lands the opportunity they have lacked for generations to improve their economic conditions and standard of living, the report points out.

While obviously designed to furnish support for American development of Middle East reserves and to suggest a pattern for the conduct of foreign oil operations in all parts of the world, the study includes a summary of the construction projects now under way or planned by oil companies in the region and estimates of the capacities which may be developed in the near future.

Current crude production is given in the study as 425,000 bbl. daily in Saudi Arabia, 500,000 in Iran, 87,500 in Iraq, 30,000 in Bahrein, and 100,000 in Kuwait. More recent figures, however, show that currently Iraq's production is down to 43,750 bbl. daily because the Haifa refinery is shut down, while Kuwait's production is up to 121,700 bbl. daily and Iran's to 522,300 bbl. daily.

More Discoveries Expected

Middle East reserves are given as 32,000,000,000 bbl., with the statement that they can be greatly increased and that oil very probably can be found in Oman and the Trucial sheikdoms and possibly in Syria, Lebanon, Trans-Jordan, and Palestine.

Approximately one-half of the Middle East production is owned by American nationals operating through full control in Saudi Arabia and Bahrein and partial interests in Kuwait and Iraq, it is pointed out.

Of the total daily production of some 1,200,000 bbl. of crude, only 43,750 bbl. daily is being delivered overland to the Mediterranean, though the normal pipe-line movement would be 87,500 bbl. daily with the Haifa refinery in operation. Currently about 410,000 bbl. daily of crude

and refined products is being shipped to the Far East and 6,000,000 bbl. daily is moved by tanker around the Arabian Peninsula through the Suez Canal and the Mediterranean to Europe and other markets, including the United States. The remainder represents local consumption and refinery losses.

By 1951, says the report, Middle East oil moving westward will increase to more than 1,100,000 bbl. daily and by 1956 it probably will be around 1,500,000 bbl. daily. In order to transport such quantities, new pipe lines will be required, as shown in the accompanying Table 1.

Refinery-expansion projects definitely scheduled for the Middle East are listed in Table 2, which does not include a major refining unit at Tripoli for which plans are still indefinite.

Total outlay of new capital to be spent by oil companies in the Middle East for pipe lines, refineries, and producing facilities during the 5-year period from 1948 to 1953 is estimated in the report at $1,924,000,000, broken down as in Table 3.

This projected development promises economic emancipation to the poverty-stricken lands of the Middle East, the report declares, and devotes considerable space to explaining how conditions may be improved in each of the countries affected.

The availability of petroleum products will permit irrigation and mechanized agriculture in a region where vast land areas are unproductive and will help the industrialization of countries which have growing populations but lack commensurate agricultural lands. The foreign ex-

TABLE 2—MIDDLE EAST REFINING CAPACITY
(Barrels daily)

Company and location—	Present capacity	Future capacity
Anglo-Iranian, Iran	422,000	495,000
Bahrein Pet., Bahrein	160,000	165,000
Aramco, Arabia	134,000	140,000
Consolidated Refineries, Palestine	90,000	154,000
Iraq Pet. Co., Iraq	9,900	9,900
Socony-Vacuum, Lebanon	5,000	5,000
Mediterranean Ref. Co., Sidon		81,500
Kuwait Oil Co., Kuwait		50,000
Total	820,000	1,100,400

TABLE 3—ESTIMATED CAPITAL EXPENDITURES, 1948-53

Trans-Arabian Pipe Line	$200,000,000
Mediterranean Refining Co.	69,000,000
Iraq Petroleum Co.	180,000,000
Refinery additions, Haifa	25,000,000
Aramco producing facilities	320,000,000
Middle East Pipe Line Co.	230,000,000
Kuwait Eastern Pipe Line Co.	200,000,000
Producing facilities in Iraq, Kuwait, Neutral Zone of Kuwait, Bahrein, Qatar, and Trucial Oman	700,000,000
Total	$1,924,000,000

TABLE 1—MIDDLE EAST PIPE LINES

Already Completed

	Diameter (in.)	Route	Bbl. per day capacity	Scheduled completion
Iraq Petroleum Co.	12	Kirkuk-Haifa	43,750	
Iraq Petroleum Co.	12	Kirkuk-Tripoli	43,750	
Total			87,500	

To Be Completed by Mid-1950

Iraq Petroleum Co.	16	Kirkuk-Haifa	87,500	1-1-49
Iraq Petroleum Co.	16	Kirkuk-Tripoli	87,500	4-1-50
Trans-Arabian P. L. Co.	30-31	Arabia-Sidon	300,000	6-1-50
Total			475,000	

To Be Completed by End of 1953

Middle East P. L. Co.	34-36	Iran-Syria	535,000	6- 1-51
Kuwait Eastern P. L. Co.	34-36	Kuwait-undetermined	300,000	1- 1-53
Iraq Petroleum Co.	30	Kirkuk-Tripoli	300,000	12-31-53
Total			1,135,000	
Grand total			1,697,000	

change provided these countries by export of oil and the employment of native workers by oil companies will raise the living standards of tens of thousands of families. Furthermore, it is pointed out, a middle class of mechanics and artisans will emerge and industries accessory to petroleum will develop, benefiting sections of the area without their own crude production.

"As the Arab feels the urge to improve his environment, American enterprise will furnish the means," says the study, pointing out that except for oil there are very few natural resources, much of the land is not susceptible of cultivation, and the average per capita income, estimated at $20 to $28 per year, is so low that mere existence is accepted as a standard of living.

General conclusions of the report are:

The Arab world itself cannot long remain indifferent to its inherent poverty. One result of the Arab-Jewish controversy has been to bring the peoples of the Middle East more forcibly in contact with the western world. The Arabs have become self-conscious. They are questioning their own social status and are exhibiting more and more concern for their own welfare.

The Middle East is in a state of turmoil, out of which will inevitably arise a national awakening. The Arabs will unquestionably endeavor to exercise control of the environment in which they live, and raise by some means their present deplorable standard of living.

Too often the tendency has been to view the Middle East as a land of promise, virtually empty and capable of great agricultural development. Although the total area of the Middle Eastern countries is vast in comparison with the population, the cultivable land is already densely settled.

It is therefore clear that, while some agricultural progress can be made in certain areas, the whole concept of better agricultural output will never be a panacea for a balanced and prosperous economy in the Middle East. Some new aspects must be developed, and this asset can unquestionably be found in the vast petroleum resources of these countries.

Arabs become artisans working for Arabian American Oil Co., as in building houses (above) or learning brickmaking (below)

International
WORLD-WIDE OIL DEVELOPMENTS

Venezuela May Have Big New Field in Tucupido

WHEN the Tucupido leases in Venezuela are further defined, Pancoastal Oil Co., C.A., and Venezuelan Atlantic Refining Co., joint owners, expect that this area will prove to be another major Latin American oil field, according to C. U. Daniels, Pancoastal president.

Daniels said that such a possibility is indicated by the fact that in the Tucupido area alone, more than 5,000 bbl. of 39.6°-gravity crude already are being produced daily by eight wells, the last of which was completed September 13. Currently there are four rigs operating there. Intensive drilling operations were initiated 6 months ago on now-producing Venezuelan oil concessions near Tucupido.

Embracing some 37,000 acres, the Tucupido leases, Daniels explained, constitute less than 12 per cent of the 326,147 acres, in 28 widely separated tracts, covered by the Pancoastal-Atlantic concessions.

Tests made in the vicinity of Pelayo, 120 miles to the east, where about 15,000 acres are under lease, have resulted in two producing wells with an initial daily flow exceeding 1,000 bbl., while, on additional acreage at Socorro, midway between Tucupido and Pelayo, a second test well is being drilled to supplement one, completed some years ago, which sanded up after coming in with an indicated daily yield of 644 bbl. of 28°-gravity crude.

In the Roble field, which is operated by Creole Petroleum Corp. but jointly owned by Creole and Pantepec Oil Co., C.A., of which Daniels is also president, the deep test well, 15 Roble, is still in the testing stage. Judging from cores, it has penetrated highly porous saturated sands in the Merecure formation, as well as encountering producing sands at shallower levels found elsewhere in the field.

Schoonebeek's Production

June crude-oil production in Holland's Schoonebeek field climbed to 41,000 tons, or approximately 10,250 bbl. daily. This compares with 37,000 tons, or about 8,900 bbl. daily, for May and 15,000 tons, or around 3,700 bbl. daily in June of last year.

(For a detailed discussion of Schoonebeek field, see The Oil and Gas Journal, September 16, page 70.)

Shipping Interests Protest Plans For Offshore Drilling Platforms

HOUSTON.—Shipping interests have protested plans of Stanolind Oil & Gas Co. to carry on drilling operations in the Gulf of Mexico in eight areas off Chambers and Galveston counties, Texas.

As a result, the Department of the Army Engineers office in Galveston has called a public hearing for October 5 on Stanolind's application for blanket drilling permits.

Col. B. L. Robinson, district Army engineer, said the American Merchant Marine Institute had recommended that an area 5 miles wide at Heald's banks—about 25 miles offshore—and tapering to about 2 miles at the jetties leading into Bolivar Roads at Galveston pass, be restricted for shipping only. The proposed fairway, which is the specific subject of the October 5 hearing, also would affect operations which are planned by Humble Oil & Refining Co. in pending applications.

The Army Engineers give approval to all structures erected in the Gulf from the standpoint of navigation or other water uses. Vessels entering or leaving the Galveston and Houston ports funnel through Galveston pass between Bolivar Peninsula and Galveston Island. The American Merchant Marine Institute which protested includes the principal American dry-cargo ship operators. A protest also was filed by Atlantic Refining Co. which operates tankers in the area.

Stanolind's application was filed in August. The company asked permission to erect all structures necessary to oil development in the eight areas, working in water varying from 24 to 60 ft. in depth.

Work Is Progressing

In its application, the company said it planned to use three different general types of structures, the largest covering an area 80 by 194 ft. A converted LST may be anchored adjacent to the structure, Stanolind said, and used as a drilling-rig tender. The structures would be marked at all times while in place with adequate lights and fog signals as prescribed by the Coast Guard, the company said.

Meanwhile, drilling and exploration work continued to move forward at an expanding rate off the Louisiana coast.

It was reported that Shell Oil Co., Inc., will soon join the group of companies already carrying on drilling off the Louisiana coast. Shell was reported preparing to drill its first Gulf of Mexico well off Pass-a-Loutre in Plaquemines Parish at a location near The California Co.'s recent Lease 1238 discovery.

The so-called Continental Combine, a group consisting of Atlantic Refining, Continental Oil Co., Cities Service Oil Co., and Tide Water Associated Oil Co., also is reported preparing to start offshore operations. The group has taken various Louisiana state leases and is now making seismic surveys.

Two permits were asked last week from the Army Engineers office in New Orleans. Kerr-McGee Oil Industries, inc., asked authorization to erect platforms for drilling in an area about 78,000 ft. by 40,000 ft. central to a point about 9 miles southwest from Oyster Bayou Light. McCollum Exploration Co., Houston, applied for permission to make temporary installations in conection with seismograph operations in an area about 200 miles long and an average of about 35 miles wide central to a point about 75 miles southwest of Morgan City.

Program Arranged for N.L.G.I. Meeting in Chicago

National Lubricating Grease Institute has set up a tentative program for i.s meeting in the Edgewater Beach Hotel, Chicago, October 11, 12, and 13. The program as it now stands will include the following addresses:

MONDAY, OCTOBER 11

"Multi-Purpose Automotive Grease," F. W. Spooner, Shell Oil Co., and H. Fraser, International Lubricant Corp.; "Modern Developments in Fats for Grease Manufacture," F. E. Lacey, Swift & Co.; "The Importance of Proper Lubrication of Farm Machinery," Lewis S. Plett, Minneapolis Moline Power Implement Co.; "The Importance of Proper Lubricants for Farm Machinery," M. D. Gjerde, Standard Oil Co. (Ind.); "Four-Point Cooperation for Satisfactory Grease Lubrication," Howard Cooper, Sinclair Refining Corp.; "Defense Requirements of Lubricants Relating Especially to Greases," Col. L. E. Cotulla, Executive Officer, Armed Services Purchasing Agency.

TUESDAY, OCTOBER 12

"Lubrication of Anti-Friction Bearings from a Bearing Manufacturer's Viewpoint," H. Reynolds, Fafnir Bearing Co.; "Lubricants for Various Roller-Bearing Applications," O. L. Magg, Timken Roller Bearing Co.; "Testing Machine for Evaluation of Ball and Roller Greases," Gus Kaufman, The Texas Co.; "Effect of Inorganic Fillers in Greases on Wear of Anti-Friction Bearings," C. W. Georgi, Quaker State Oil Refining Corp.; "Some Phases of Automotive Grease Lubrication," H. F. Wolf, General Motors Corp.; "Soap as a Lubricant," C. J. Boner, Battenfeld Grease & Oil Corp.; "All Purpose Greases," Dr. E. M. Kipp, Aluminum Co. of America.

The October 13 session will be a meeting of the technical committee.

Plans Forming to Permit Texas Gulf Prospecting

AUSTIN.—Bascom Giles, commissioner of the General Land Office of Texas and chairman of the State School Land Board, is making preliminary plans for a meeting in Austin of geophysical and oil-company representatives and other interested persons to consider legislation which would authorize geophysical prospecting in the Gulf of Mexico.

The meeting, to which sportsmen, commercial fishermen, and any interested state legislators would be invited, probably will be held some time in late October. The group will be asked to make suggestions as to a geophysical-exploration bill which is to be introduced in the next legislature convening in January.

Under an opinion of the Texas attorney general issued last year, oil companies are prohibited from conducting any geophysical work in the Gulf of Mexico except on land which they hold under lease. This prohibition has been recognized as a serious deterrent to further leasing and development in Texas' Gulf of Mexico lands.

Mississippi Oil Board to Consider Rules Revision

HOUSTON. — The Mississippi Oil and Gas Board has scheduled a hearing October 22 in Jackson to consider any revisions in rules of procedure or statewide regulations.

The Mississippi regulatory agency was reorganized by the last legislature. The new board asked for any suggestions as to changes in rules several months ago.

On October 21, the Mississippi board will hold a hearing on prorating and recording underages and overages of gas produced in Gwinville gas field.

Texas Section of A.A.P.G. To Meet in Mexico City

By virtue of a special invitation extended by Petroleos Mexicanos, the fifteenth annual meeting and field trip of the South Texas section (South Texas Geological Society) of the American Association of Petroleum Geologists will be held in Mexico City October 18-23, 1948.

Two field trips are planned, one through Mexican oil fields by way of Poza Rica, Tampico, and Reynosa on October 21, 22, and 23. The other, a trip to the volcano Paricutin, will be October 21 and 22.

Technical programs will be held October 19 and 20, dealing with problems of petroleum exploration in Mexico.

Texas Part of Hugoton Gas Field Put Under Commission Proration

AUSTIN.—The Texas portion of the three-state Hugoton gas field will go under Railroad Commission proration October 1.

The area is the twenty-eighth gas reservoir in Texas to be prorated, and the plan marks the first use in Texas of the factor of deliverability in a gas allocation formula.

The special order adopting field rules for the area followed several hearings by the commission. All field rules were made effective July 1 but the proration plan was held up pending determination of deliverability rates for connected wells and filing of acreage plats. The commission originally proposed to make the proration effective September 1, but this was changed to October 1 when some tests were not completed in time.

Hugoton field is one of the nation's major gas reservoirs. From Kansas it extends across the Oklahoma Panhandle into three Texas counties, Sherman, Hansford, and the northwest corner of Moore County. In adopting the deliverability factor for proration, the Railroad Commission brought the Texas portion of the field under a method similar though not exactly like those used in Kansas and Oklahoma.

For the initial month's operation under proration, Texas Hugoton gas purchasers nominated withdrawals of 164,938,000 cu. ft. daily. This represents an increase of about 14 per cent in the amount of Texas gas previously prorated. Total allowable for prorated fields in September was 1,150,154,593 cu. ft. daily. Total production of gas-well gas as reported to the Railroad Commission approximates 6,600,000,000 cu. ft. daily, including both prorated and nonprorated production.

Will Adjust Takings

The October nominations are expected to be adopted in full by the commission. Later nominations will be adjusted to actual production so that the field's production will be the determining factor. The Hugoton order provides underproduction may be carried forward 6 months and made up in the following 6 months, while overproduction is balanced for the following 6 months twice each year. No well is permitted to produce twice its daily or monthly allowable in either case.

Reports are that the Texas portion of Hugoton is due for an active drilling program. Present purchasers of the gas are Phillips Petroleum Co. and Shamrock Oil & Gas Co. These two compaines also are principal operators. The others are Cities Service Oil Co., Kerr-McGee Oil Industries, Inc., The Texas Co., and Bayou Oil Co. Michigan-Wisconsin Pipe Line Co., now building a line to the North-Central section, is scheduled to take part of its gas requirements from this area.

The allocation formula for the field is deliverability times acreage. The order defines deliverability as the ability of the well to produce gas at a working pressure equal to 80 per cent of the shutin well-head pressure and provides methods of testing the wells in the presence of a commission representative. During the summer commission engineers from all parts of the state were sent to Hugoton to conduct the tests.

The deliverability rate is determined by producing the well into the pipe line for 72 hours at 80 per cent of shutin pressure. The order sets up a formula for converting observed stabilized producing rate to deliverability if the well-head pressure at the end of the test period varies from the 80-per cent figure.

The factor of deliverability is considered as reflecting the factors of well potential, reservoir pressure, permeability, porosity, and pay thickness, and is thus indicative of reserves. It is expected to be roughly equivalent to 25 per cent of open flow. Various other formulas are used in other prorated gas fields, making use of the factors of acreage, bottomhole pressure, and potential.

A total of 194 wells, 179 sweet gas and 15 sour gas, are included in the Hugoton proration schedule. In its order, the commission formally designated the area as the Texas Hugoton field and found it to be continuous with the Oklahoma and Kansas areas. The Texas Hugoton area was held to be separate from the Panhandle field to the south for all practical purposes. Low permeabilities and higher pressures to the north and west make negligible any migration of gas across the narrow neck between Panhandle and Texas Hugoton, the commission said.

The west sour zone of Panhandle field is one of the 27 gas fields in Texas now prorated. Principal prorated field is Carthage where the September allowable was 495,000,000 cu. ft. daily. There are approximately 900 fields in Texas that produce dry gas in some amount.

NEW TERMINAL IN OPERATION

A new Gulf Coast marine terminal has been placed in operation on the Neches River north of Port Neches by McCarthy Oil & Gas Corp. Shown in the photograph is the S.S. Calusa, a T-2 tanker, of Socony-Vacuum Oil Co., Inc., as it loaded the first shipment from the terminal. The cargo was 138,000 bbl. of gasoline. The terminal includes one 55,000-bbl. tank and eight 10,000-bbl. tanks and is connected through a 30-mile, 6-in. pipe line to the Winnie, Tex., natural-gasoline plant of Absorption Plant, Inc., a McCarthy subsidiary. The first unit of an integrated chemical plant has been completed at Winnie, and shipments of various chemicals as well as petroleum products are expected to be made later from the Port Neches terminal

Unusual Water-Injection Project Proposed to Texas Commission

AUSTIN.—A water-injection program estimated to recover an additional 1,457,000 bbl. of oil in a geologically isolated segment of the New West Columbia field in Brazoria County has been proposed to the Railroad Commission by The Texas Co.

The somewhat unusual circumstances that the area underlies a single lease of The Texas Co. and involves no other operator facilitates the secondary-recovery plan. Otherwise unitization would be necessary to carry out the program which includes closing in wells producing excessive amounts of water or gas.

Testimony on the plan was taken by the commission at a hearing last week. Temporary permission was granted the company earlier in the month to proceed with the program.

The area involved comprises about 80 acres in the W. H. Abrams lease. It produces from four Frio sands ranging in depth from 4,750 to 5,747 ft. The productive area is cut off by faults on the north and south, by a pinchout against the salt on the east, and by water contact on the west or down-dip side.

The company asked the commission to approve placing the area on a reservoir allowable basis. Under this, the total allowable would be distributed to the most appropriate wells by the company with the approval of the commission. The reservoir allowable plan is authorized in only a few other fields in Texas.

To Use Dual Wells

At present there are seven wells in the area, five of them dual completions with one completion not now used. The Texas Co. proposes to use two dual injection wells into the four sands.

Testimony at the hearing was that the four sands contain 9,070 acre-feet of hydrocarbon space and that 11,931,000 bbl. of stock tank oil were originally in place. Production as of last July 1 amounted to 889,000 bbl. A total of 7,150,000 bbl. was estimated recoverable under the pressure-maintenance program against 5,700,000 bbl. using present production methods.

The company asked that the reservoir allowable be assigned on a quarterly basis. A total of 550 bbl. daily was given as an efficient reservoir production until the water-injection program gets under way. Then, according to the testimony, production probably can be stepped up to 1,500 bbl. daily. A quarterly allowable plan is desirable since water production cannot be forecast exactly and it may be advantageous to switch allowables.

Water injection into each zone will be in proportion to reserves, thus permitting simultaneous depletion of the reservoirs. Total depletion time was placed at 15 years. The various producing zones have a natural water drive, and bottom-hole pressure, now 2,225 psi. is falling about 50 psi. a year at present.

In asking a reservoir allowable, it was pointed out the fault block would be set aside as a separate part of the field. Data would be submitted to the commission for the quarterly readjustment of the reservoir allowable.

The commission is expected to act on the application in the near future. At the hearing, The Texas Co. was represented by H. E. Treichler, assistant division engineer, Houston; R. W. Holman, division reservoir engineer, Houston; and E. C. Rack, consultant associated with R. W. Byram, Austin.

Special Allowables Given Louisiana Offshore Wells

BATON ROUGE.—Special higher production allowables for wells in the Gulf of Mexico have been granted by the Louisiana Department of Conservation.

In an order September 25, S. L. Digby, conservation commissioner, set up a separate depth bracket scale for offshore wells. A 2,000-ft. offshore well is allowed 265 bbl. daily compared to 76 bbl. daily for a well of the same depth on land. The scale ranges up to 675 bbl. daily for wells of more than 13,000 ft., compared to 410 bbl. for such wells on land.

The higher allowable for offshore wells continue until sufficient reservoir data is accumulated to determine maximum efficient rate of production. The temporary rate allowed in the special scale is high enough to allow operation for a reasonable length of time but not so high that the reservoirs will be endangered, according to Conservation Department engineers.

Another concession to offshore operators was a provision allowing increases up to 25 per cent in daily production to make up for losses occasioned by bad weather and other hazards of the water location.

Digby's order followed a hearing last month at which Kerr-McGee Oil Industries, Inc., requested a greater allowable for its offshore wells in view of the heavy costs of the operations.

Speed Honored as Texas' First 50-Year Producer

SAN ANTONIO.—Carleton D. Speed, Sr., of Corsicana was honored by the Independent Petroleum Association of America at a luncheon September 27 as the first person to produce oil in Texas for 50 years continuously.

Speed, son and father of oil men, now 81, brought in the first well in Corsicana September 23, 1898. The original well and two others owned by him are still producing and have shown little decline during the past 20 years. No other individual or firm can match this record, since major oil companies did not enter Texas until discovery of Spindletop in 1901.

At the time Speed entered the oil business with his father, L. E. Speed, drilling methods were extremely crude. His first wells were drilled with tools made in blacksmith shops and were "cemented" with rags wired to the bottom of the oil string.

Speed's uncle, Tom Stribling, and his younger brother, Guy B. Speed, participated in the Spindletop development and were well known in Texas oil circles in the early days. His son, Carelton D. Speed, Jr., born within 20 ft. of the original oil well, is president of Speed Oil Co., Houston.

Carleton D. Speed, Sr., honored as the first person to produce oil in Texas for 50 years, standing beside his original well, still producing, in Corsicana

A.S.M.E. Schedules Heavy Program For Annual Petroleum Conference

ELABORATE plans are under way for the 1948 petroleum conference of the American Society of Mechanical Engineers, October 3, 4, 5, and 6 in Amarillo, Tex. Headquarters of the 4-day meeting will be in the Herring Hotel, where registration will open Sunday, October 3. Followings is a list of meetings scheduled.

MONDAY, OCTOBER 4

9:30 a.m.—Executive Committee, open to members of executive committee, advisory committee, committee chairmen, regional vice chairmen, members of special committee on papers and publications, and Amarillo arrangements committee.

10:45 a.m.—Production Committee, refining committee, transportation committee, materials committee, manufacturers committee.

Refining Session

2:00 p.m.—"Interconnected Control, Instrumentation for Systems Involving Unfavorable Lags," symposium conducted by J. A. Pellettere, chief instrument engineer, Gulf Oil Corp.; "Instrumentation of an Oil Refinery," T. M. Hoffman, engineering division, Humble Oil & Refining Co.; "Gasoline and Refinery Instrumentation, Better Practice Guides," J. M. Ribble, chief instrument engineer, Phillips Petroleum Co.; "Refinery Instrumentation," V. V. Tivy, sales manager for refining industry, Foxboro Co.

Production Engineering Session

2:00 p.m.—"A Ring Dynamometer for Pumping Wells," D. O. Johnson, Johnson-Fogg Engineering Co., Tulsa; "Field Control of Oil Field Equipment," J. N. Gregory, division superintendent, Shell Oil Co., Inc., Long Beach, Calif.

Equipment and Construction Materials Session

2:00 p.m.—"Hydraulic Torque Converters and Fluid Couplings for Oil Field Machinery," H. A. Davis, district manager, Twin Disc Clutch Co., Dallas; "Filteration of Fuel and Lubricating Oils Used in Internal Combustion Engines," F. Lee Townsend, sales manager, William W. Nugent & Co., Inc., Chicago; "Protection of Pressure Vessels by Rupture Discs," C. H. Huff, general sales manager, special products division, Black, Sivalls & Bryson, Inc., Oklahoma City.

Field Trip

4:30 p.m.—Field trip through industrial area of Panhandle gas fields.

TUESDAY, OCTOBER 5

9:30 a.m.—"Primary Creep in the Design of Internal Pressure Vessels," R. P. Sheopler, L. F. Coffin, Jr., and G. S. Cherniak, Lessells & Associates, Boston.

Construction Materials Session

9:30 a.m.—"A Survey of Worldwide Corrosion Problems from the Standpoint of Materials," M. S. Northup, research metallurgist, Standard Oil Development Co., Elizabeth, N. J.; "Notes on Uses of Stainless Steels in the Petroleum Industry, "Paul Weinman, sales engineer, Armco Steel Corp., Tulsa.

Production Engineering Session

9:30 a.m.—"Drilling Rigs for Deep Wells," J. R. Mahan, director of engineering, National Supply Co., Toledo; "Drilling Rig Engineering," W. H. Griffith, chief mechanical engineer, International Derrick & Equipment Co., Columbus.

Construction Materials and Equipment Session

2:15 p.m.—"Results of Tests of Some Pressure Vessels at 320° F.," T. N. Armstrong, metallurgical engineer, International Nickel Co., New York; "The Strength of Welded Joints in Thick Aluminum Plates," C. B. Voldrich, chief welding engineer, Battelle Memorial Institute, Columbus; "Factors Influencing the Economical Design of Pressure Vessels," G. E. Fratcher, design and development engineer, vessel division of A. O. Smith Corp., Milwaukee.

Transportation Session

2:15 p.m.—"Calibration of Positive Displacement Meters by Volumetric Method," M. L. Barrett, meter supervisor, Shell Oil Co., Zionsville, Ind.; "Calibration of Positive Displacement Meters by Gravimetric or Weigh Method," J. B. Smith, Clark Goodman Supply Co., Cleveland.

Production Engineering Session

2:15 p.m.—"The Operating Characteristics and Requirements of Draw Works Brake Equipment," R. G. De La Mater, vice president, Parkersburg Rig & Reel Co., Parkersburg, W. Va.; "Tool Joint Design and Mud Flow in Drilling," S. C. Moore, product engineer, Hughes Tool Co., Dallas.

WEDNESDAY, OCTOBER 6

Synthetic Liquid Fuels Session

9:30 a.m.—"Synthetic Fuel Plants," W. C. Schroeder, chief, office of synthetic liquid fuels, U. S. Bureau of Mines; "Some Problems Associated With the Fischer-Tropsch Process," Eugene Ayres, C. W. Montgomery, and Joel H. Hirsch, research staff, Gulf Research & Development Co., Pittsburgh; "Liquid Fuels From Natural Gas," R. C. Allen and Alfred Clark, research staff, Phillips Petroleum Co., Bartlesville.

Transportation Session

9:30 a.m.—"Automatic Control in Diesel and Electric Pipe-Line Stations," S. S. Smith, manager of products, Shell Oil Co., New York; "Fully Automatic Electric-Powered Crude-Oil Gathering Stations," F. H. Warren, Ohio Oil Co., Findlay, Ohio.

Production Engineering Session

9:30 a.m.—"Mechanical Controls for High-Pressure Oil and Gas Wells," J. H. Ward III, petroleum engineer, Humble Oil & Refining Co., Houston; "Automatic Drilling Feed Controls for Rotary Drilling Rigs," W. S. Crake, chief mechanical engineer, Shell Oil Co., Houston.

Refining and Equipment Session

9:30 a.m.—"Construction of Katy Gas Cycling Plant," W. R. Robertson and H. N. Stamper, Humble Oil & Refining Co., Houston; "Oil-Field Boilers—Performance and Construction," S. Mensonides, vice president, Farrar & Trefts, Inc., Buffalo.

Transportation Session

2:15 p.m.—"Pressure Surges in Pipe Lines," E. T. Skinner, student engineer, Oklahoma A. & M. College, Stillwater; "A Case History of Some Pressure Surges," C. B. Lester, Sohio Pipe Line Co., St. Louis; "Pressure Surges and Vibration in Reciprocating Pump Piping," J. W. Squire, Stanolind Pipe Line Co., Tulsa.

Production Engineering and Refining Session

2:15 p.m.—"Mining Colorado Oil Shale," Tell Ertl, mining engineer, Union Oil Co. of California, Rifle, Colo.; "Development of Union Oil Retorting Method for the Recovery of Shale Oil," Homer Reed and Clyde Berg, Union Oil Co. of California, Los Angeles.

Construction Materials and Production Session

2:15 p.m.—"Review of Tubular Goods in the Petroleum Industry," V. V. Kendall, corrosion engineer, National Tube Co., Pittsburgh; "Drill Pipe Corrosion Problems," G. L. Corrigan and A. E. Schlemmer, Oklahoma A. & M. College, Stillwater.

Field Trip

4:30 p.m.—Field trip to Excell helium plant, inspection of U. S. Government helium extraction plant.

Wrather Making Annual A.I.M.E. Division Visits

William E. Wrather, president of American Institute of Mining and Metallurgical Engineers and director of the U. S. Geological Survey, is making the annual presidential tour of A.I.M.E. divisions, addressing many of them on the subject, "The Future Outlook for Mineral Supplies."

Wrather will be in Tulsa September 30, in Oklahoma City October 1, and will attend A.I.M.E. meeting in Dallas October 4-10. He will be in New Orleans October 11, in Houston October 12, in Corpus Christi October 13, in Fort Worth October 14-15. From Fort Worth he will tour various parts of the Permian basin and New Mexico.

Next Week

The Journal's Annual Drilling Contractors and Equipment Issue.—Prepared especially for drilling contractors and those supervising drilling and operating companies . . .

Drilling Articles.—These outline the "business" side of today's contract-drilling operations, give figures and facts on present drilling activities, and feature modern drilling practices. Besides rotary drilling, there will be an article, "Toward a Better Understanding of Cable-Tool Drilling."

Today's Drilling Rigs.—1948 has brought more improvements and new designs in drilling rigs than ever before. The issue will feature the outstanding drilling rigs, manufacturer by manufacturer, in a special 32-page section (drawings, photos, two-color layouts).

And Something Extra.—Special Journal-Log "Drilling Chart" of all formations and producing horizons in the United States—state by state and area by area. This, a large multicolor folded chart, will be contained in the Journal as an insert. Prepared in well-known "Journal-Log" style.

I. P. A. Cheers Price News, Asks More Steel

(Continued from page 46)

and that whether requirements will be met by domestic production or by coal and oil-shale conversion is a question of available resources.

E. O. Thompson, chairman of the Texas Railroad Commission, who said that the industry must rebuild an excess producing capacity in deliverable oil to meet any emergency since "there will be no time to drill and develop some government reserve land."

In his report as outgoing president, Becker singled out the shortage of tubular goods as the greatest problem which the association has carried over into its new year.

The fact that the industry is now setting records in wells drilled should not be taken as meaning a sufficient number actually is being drilled. The industry, he said, is drilling at a rate consistent with current demand but is not developing new production and new reserves.

"Putting it plainly, the petroleum industry is not obtaining a volume of steel commensurate with the job it has to perform," Becker said.

He touched on current supply and demand problems, saying: "The mere fact that we are succeeding in doing the job that some in industry and Government claimed could not be done will not eliminate the cry of 'oil shortage.' The public is highly allergic, by reason of lack of knowledge, to misstatements such as these."

Depletion a Fallacy

Senator Malone, who spoke at the annual banquet, is chairman of the Senate's national resources economic committee. He said he had called this group to begin meetings January 18 to determine definitely the status of synthetic fuel development.

In his speech, Malone made it clear he does not hold with various government officials who declare that the country is facing depletion of its oil supply. There was never, he said, a greater fallacy or misrepresentation of the facts.

"The domestic production of petroleum and minerals has been severely retarded through the 'have-not' policies of federal boards, commissions, and bureaus, and the tons of government propaganda turned out every day, advocating imports of these vital strategic fuels and minerals for domestic use," he said. A going healthy industry and, if necessary, use of synthetics, will supply our oil needs.

Commenting on the recent National Security Resources Board report advocating "saving" domestic petroleum, the Senator quoted from a report made by a government committee on resources in 1939. It definitely advocated federal regulation of the petroleum industry. Malone said this report was prepared by Ralph J. Watkins who now is chief of the programs and planning division of the present National Security Resources Board. This, he said, illustrates the unchanged philosophy of some in the Government.

Thompson, in a summary of the industry's current position, said it is imperative that more steel be made available. Furthermore, he said, we cannot risk the chance of letting "the palsied hand of federal control dry up oil development on our tidelands."

"Our experience of the past has shown us that the best oil development comes under state regulation and control," Thompson said. "The present development offshore is only the beginning, and when the cloud is removed from the title of the states, it will come fast."

Oil for 100 Years

In his address Egloff gave an unqualified affirmative answer to the question whether the United States can be self-contained as to oil.

"The petroleum industry has practically met every demand for products during its 90 years in business and will continue to do so for at least another century," he said. "Whether requirements will be met by domestic petroleum and natural gas production or by conversion of coal and oil shale is a question of available resources.

"With proper conservation measures in the production, refining, and consumption of petroleum, our reserves will last at least 100 years. If our production ever fails to keep pace with demand, the next step will be to make liquid fuels from coal and oil shale."

Estimating liquid-fuel reserves of the future, Egloff said continental United States should yield another 100 billion barrels of crude oil plus 35 billion more from secondary recovery methods; the Continental Shelves may be counted on for another 100 billion; oil shale will yield 300 billion barrels of oil; natural gas can be made to produce 12 billion barrels of liquid fuels; and use of half of our known coal reserves in synthetic-fuels processes will yield 3,700 billion barrels of oil products.

This total of 4,247 billion barrels of liquid fuels assures us of supplies for 2,000 years at our present rate of consumption of approximately 2 billion barrels annually, he declared.

To support these estimates, Egloff reviewed briefly the many new means of obtaining additional oil and making more efficient use of it.

At present our entire current production of crude oil comes from about 4,500,000 acres, whereas there is geological evidence that oil deposits will underlie at least a billion acres of land in continental United States, he said. On this basis more than 99 per cent of our potential oil-bearing areas are still waiting to be developed.

Research in methods of exploration has brought forth many new devices and methods for increasing the probability of locating oil, and improvements in drilling tools and drilling muds and methods of completing and acidizing wells have greatly increased production and are expanding our reserves, he pointed out. In addition, the industry is learning more about how to obtain maximum recovery of crude from the sands, both in primary reservoir control and in secondary-recovery operations.

Science Is Aiding

While these improvements are increasing our crude reserves there are equally important advances in preventing waste above ground in transportation, storage, and particularly in refining, Egloff related, and he predicted important future improvements in utilization of petroleum products through more efficent motors and burners. He also outlined the various methods for obtaining liquid fuels from natural gas, oil shale, and coal, but warned that these may be expensive and that the Government should not rush into large-scale operations or subsidies on the basis of present techniques and economics.

"Despite continuing high demands, the petroleum industry faces the future with confidence," Egloff concluded. "Given the proper economic and poltical atmosphere, the industry will meet all demands as it always has. It is finding and producing more oil, providing pipe lines, tankers, and tank cars for transportation, enlarging its refineries, and expanding its marketing facilities as rapidly as steel can be obtained for construction."

New Officers Elected

In addition to a new president and treasurer, the association also approved the nominating committee report electing six new executive committeemen and 16 new and area vice presidents.

New executive committeemen are: J. P. Evans, Jr., Jackson Miss.; I. W. Hartman, Mount Pleasant, Mich.; Maston Nixon, Corpus Christi; Bryan W. Payne, Tyler, Tex.; Lee Wescoat, Chicago; and K. Z. Wilking, Owensboro, Ky.

New vice presidents are: R. G. Lawton, Mangolia, Ark.; F. A. Calvert, Jr., Olney, Ill.; Carl A. Morrison, Owensboro, Ky.; T. Glenn Caley, Saginaw, Mich.; Rees R. Oliver, Jackson, Miss.; Casper T. Oien, Oilmont, Mont.; Bayard T. Haskins, Wellsville, N. Y.; James A. Upham, Mount Vernon, Ohio; George F. Martin, Tulsa; William T. Payne, Oklahoma City; Clyde H. Alexander, Dallas; J. P. Coleman, Wichita Falls, Tex.; R. C. Kay, Amarillo; Robert L. Wood, Midland; Kenneth D. Owen, Houston; and L. A. Nordan, San Antonio.

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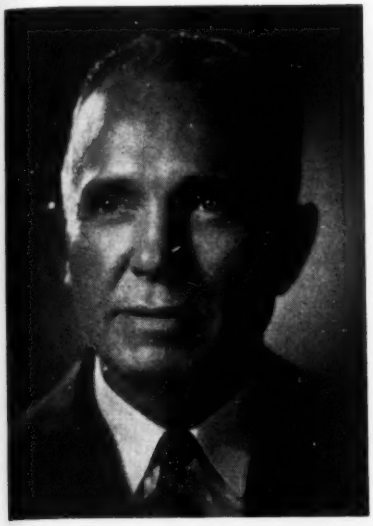

J. N. Troxell Now in 26th Year With The Texas Co.

JOHN N. Troxell, assistant manager-departmental geologist, producing department, The Texas Co., Houston, is now in his twenty-sixth year of service with the company which he joined as an assistant geologist in Tulsa.

Troxell was born in Ridgway, Pa., where he attended grade and high schools. He was graduated from the University of Pittsburgh in 1922 with a degree in petroleum engineering. Following his freshman year in the university, he enlisted in the Army and served in France and England with the 116th Engineers, Forty-First Division.

After entering the employ of The Texas Co. in 1922, Troxell served as a geologist in the Oklahoma-Kansas-Kentucky division until July 1932 when he was transferred to the geological department of the South Texas division in Houston. In February 1934, he returned to Tulsa as division geologist of the Oklahoma-Kansas-Kentucky division. He remained there in that capacity until July 1938 when he was transferred to Houston as geologist on the staff of the manager of the producing department.

In 1943, Troxell was made departmental geologist for the producing department, domestic, east of the Rocky Mountains, and in April 1947, he was appointed assistant manager-departmental geologist, producing department, with headquarters in Houston.

Edgar M. Pilkinton, Geological Survey, has been made supervisor of all unit plan work for the geological survey in the United States and Alaska with headquarters in the Washington office. He has been deputy supervisor of the Mid-Continent region for the survey.

R. F. Gilmore, after 22 years service has resigned his position in the land department of Sinclair Prairie Oil Co., effective November 1. For the last 4½ years Gilmore has been in the Tulsa office under **H. B. Smith,** vice president. His future plans have not been announced.

Special assignments with The Texas Co. have forced **L. H. Jones** to resign his office as president of Petroleum Motor Transportation Association. Jones' duties with The Texas Co. will take him to Caracas, Venezuela.

T. A. van Griethuysen has been appointed manager of a separate crude-oil trading department of Continental Oil Co. Originally this department was a section of the pipe-line division. Van Griethuysen, formerly assistant manager of the pipe-line division in charge of oil trading, is completing his twentieth year with Continental Oil Co. He graduated from the University of Oklahoma and joined Continental in 1929, serving successively in the general accounting, personnel, and real estate divisions, and production and drilling departments.

Roy E. Doty has been named vice president of The California Co. with headquarters in Chicago. Doty was formerly manager of sales in charge of marketing of eight western states and has been replaced in that position by **C. M. Tuller** who will office in Denver.

Hugh Johnson, Continental Oil Co., production department, has been transferred from Midland to Fort Worth as assistant region manager, succeeding **R. M. Hunter** who will move to Ponca City, Okla. **Harry Miller,** district production superintendent at Big Spring, Tex., will be transferred to Midland, Tex., as division superintendent for West Texas and New Mexico. **Garnett Plank,** assistant superintendent in the Wichita Falls district, will replace Miller at Big Spring.

Chester F. Smith, vice president and director of Standard Oil Co. (N. J.), **John W. Brice,** coordinator of production, **John W. Connolly,** coordinator of marketing, and **William J. Haley,** coordinator of manufacturing, all of the New York office, are making a tour of Mid-Continent properties of Carter Oil Co. and other subsidiaries of Standard Oil Co. (N. J.).

J. L. Cahill of Tulsa has been appointed chief engineer of Continental Pipe Line Co. Cahill's engineering career has covered a broad field of research, designing, and construction. He is a designer of precision instruments and inventor of a hardening process for steel. A graduate mechanical engineer, he started his career with J. & L. Machinery & Engineering Co. and later served with the U. S. Army Engineers where he designed portable equipment for overseas shops of the Seabee's, and also contributed to the development of the 20-mm. antiaircraft gun for the Bureau of Ordnance.

E. F. Semrad has been appointed to the staff of Ford, Bacon & Davis Engineering Co. in Kansas City. Semrad until now has been gas engineer at Oklahoma City for Cities Service Gas Co.

Veteran cable-tool operator, **Robert Ramsey,** Cleveland, Okla., has joined the staff of Fred E. Cooper, Inc., Tulsa, and will be assigned to the Northeast Oklahoma and eastern Kansas territory.

Harry W. Ross has joined Sohio Petroleum Co., subsidiary of Standard Oil Co. (Ohio), as coordinator between the crude oil purchasing department and operating management of the production department. Ross was formerly production operations superintendent with The Texas Co. and before that he was with Dow Chemical Co. He will make his headquarters in Tulsa.

James B. Gary, Jr., has been appointed supervisor of construction for Great Lakes Pipe Line Co. Gary has had broad experience in construction work including employment with D. C. Bass & Sons Construction Co., Enid, Okla., where he aided in the construction of Great Lakes pump

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stations and terminals on the pipe line from Kansas City to Grand Forks, N. D.

Wesley Davis, who has been with Chicago Corp. in Corpus Christi the last 5½ years, has been made district geologist for Warren Oil Corp. in Corpus Christi.

Rudy F. Williams has been named superintendent of terminals of Ethyl Corp.'s new storage terminal plants at Edge Moore, Del., and Wilmington, Calif. **Clarence H. Johnson** has been appointed supervisor at Wilmington.

Formation of the geological firm of McNeil & Roberts with offices in the Derby Building, Wichita, Kans., was announced this week by its partners, **Harold E. McNeil** and **Thomas N. Roberts.** McNeil was formerly chief geologist for Derby Oil Co. and Roberts was geologist for British-American Oil Co. and prior to that, with Mid-Continent Petroleum Corp.

Frank Champion and **Roland E. Smith** have organized the new export firm of Champion & Smith, Inc., with offices already established in New York; Los Angeles; Houston; Edmonton, Alta.; and Caracas, Venezuela. The firm will represent several manufacturers of oil-field equipment. Champion is president of the organization and Smith is secretary-treasurer. Both men are former chapter presidents of the National Oil-Equipment Manufacturers and Delegates Society.

Leo L. Leabo, vice president of Bay Petroleum Corp., has been elected Colorado chairman of the Oil Industry Information Committee, succeeding **Roy E. Doty.**

Clark H. Kountz, vice president in charge of pipe lines, has retired from Sinclair Refining Co., after having been engaged in the oil business since 1901. His first job was as messenger boy with Ohio Oil Co. He joined Prairie Oil & Gas Co. in 1905 and was elected vice president of the newly organized Prairie Pipe Line Co. in 1915. When Prairie Pipe Line Co. merged with Sinclair Oil Corp., Kountz became chairman of the board of Sinclair Prairie Pipe Line Co. He became vice president, Sinclair Refining Co., in 1936 when pipe-line operations were taken over by the refining organization.

N. A. Hollingsworth, Tide Water Associated Oil Co., Tulsa, was elected president of the Petroleum Accountants Society of Oklahoma at their annual meeting. Other officers elected were **L.M. Gelvin,** Skelly Oil Co., first vice president; **E. H. Loosley,** Continental Oil Co., Ponca City, second vice president; **Carl J. Senger,** Warren Petroleum Corp., secretary-treasurer; and **M. F. Axton,** Midstates Oil Corp., assistant secretary-treasurer. New directors elected were **Horace B. Arnold,** Sun Oil Co., Senger and Loosley.

H. R. DeVinna, formerly an assistant chief of seismograph water parties for Stanolind Oil & Gas Co., has been placed in charge of water parties operating out of Abbeville, La., and Port Arthur, Tex. Other personnel changes involving seismograph party chiefs in Stanolind's Texas-Louisiana Gulf Coast division, were **W. S. Wherry,** named chief of a party at Eunice, La., a group which has been converted from a water to a land party, and **H. F. Robinson,** previously assistant party chief of a group at Ardmore, Okla., named chief of a party at Cotulla, Tex.

B. L. Clark, Wesley Davis, and **Richard W. Fry** have joined the geological and land departments of Warren Oil Corp. Clark, formerly with Stanolind Oil & Gas Co., Tulsa, has become district geologist with headquarters in Houston. Davis, formerly with Chicago Corp., has been made district geologist with offices at Corpus Christi, Tex. Fry was formerly with George W. Strake and has gone to Corpus Christi as district land man.

H. H. Bradfield, senior geologist with The Texas Co. in Fort Worth, has been placed in charge of the North Texas district, filling the vacancy created by the resignation of **W. D. Kelly,** who resigned to go into consulting work. Bradfield has been with The Texas Co. since 1935. In his new position, he will supervise geological activities in 56 counties in North and Central Texas where the company has extensive holdings.

Simeon B. Christy, formerly of the Denver, Colo., office of Sun Oil Co., has been named manager of the company's new production district office at Roswell, N. M., and **W. J. Hardy,** former manager of the land office at McAllen, Tex., has been named manager of the new Amarillo district; **J. E. Regent,** former manager of the Midland district, has been named to succeed Christy at Denver. **Clarence M. Chase** will succeed Regent. Other personnel changes resulting from the reorganization of the West Texas-New Mexico areas include: **J. B. Hamilton,** district superintendent of production, to supervise operations in West Texas and New Mexico, with headquarters in Midland; **E. L. Kownsler** to production foreman in charge of Hobbs, N. M., area; **Hans Winkler,** from Midland to Roswell, as subsurface geologist; **Ross Ley,** from Dallas to Roswell in charge of general geological work; **Roy B. Lockett,** from Dallas to Midland as assistant to Chase who becomes manager of the Midland district; **T. P. Braselton** succeeds **W. J. Hardy** as manager of the land office at McAllen, Tex.; **Robert B. Totten,** from Delhi, La., to Amarillo, as geologist; **Grady D. Herrington** and **Paul H. Horn,** formerly of Monroe, La., to assist Totten; and **Dana T. Whitton,** field geologist, to Abilene, Tex., in the Midland district under **W. H. Conkling.**

Ohio Oil Co. officials are greeted by Sylvester Dayson (extreme right), president of Premier Oil Refining Co. of Texas, upon arrival of their plane from Findlay, Ohio, for Premier's sixth annual golf tournament and barbecue. (Left to right) are: L. B. McCammon, manager of refined products; R. E. Luton, manager of the refining division; and C. Z. Hardwick, vice president of refining and marketing

Hugh Platt, geology graduate from the University of Kentucky, has joined Phillips Petroleum Co.'s offices in Amarillo.

H. R. Tainsh, senior geologist for Burma Oil Field, Ltd., London, who is making a tour of American oil fields, addressed members of the Fort Worth Geological Society last week. He talked on the tertiary geology and principal oil fields of Burma. **M. M. Slotnick,** supervisor of the geophysical department, Humble Oil & Refining Co., Houston, discussed the new techniques of geophysical exploration in connection with offshore work in the Gulf of Mexico.

James M. Bird, James M. Bird Oilwell Survey, Bradford; **John F. Buckwalter,** Ryder-Scott Co., Bradford; **C. B. McMahan,** Natural Gas Pipe Line Patrols, Pittsburgh; and **Paul Benedum,** Benedum Trees Oil Co., Pittsburgh, were speakers at a meeting of the Engineers Society of Western Pennsylvania and the Pennsylvania Grade Crude Oil Association September 17 in Bradford.

Fred Sehmann, Wichita Falls, Tex., has been named president of the National Stripper Well Association to succeed **J. Howard Marshall,** Ashland Oil & Refining Co. **J. P. Jones,** Bradford, Pa., was named vice president.

Guy H. Woodward has been named legal representative for Mid-Continent Oil and Gas Association. He will maintain offices in the Commonwealth Building in Washington, D. C. Woodward has served with Independent Oil & Gas Co., with Stanolind companies and most recently he has been executive assistant to U. S. Senator, **E. H. Moore.**

J. E. Rouse, vice president in charge of operations of Stanolind Oil & Gas Co., and **Charles T. Jones,** manager of the company's foreign operations, were in Houston last week on their way to Bogota, Colombia, and a tour of inspection of Stanolind operations in Colombia.

SHIFTS—

H. D. Hobson, geologist, General Petroleum Corp., Bakersfield, to Los Angeles, Calif.; **E. R. McGee,** engineer, Richfield Oil Corp., Bakersfield, Calif., to Lubbock, Tex.; **William H. Engel,** Standard Oil Co., Calif., Taft to Bakersfield, Calif.; **Jack McWilliams,** engineer, Stanolind Oil & Gas Co., Alvin to Houston 3, Tex.

John D. Ford, engineer, Phillips Petroleum Co., Phillips to Borger, Tex.; **R. Buniva,** engineer, Superior Oil Co., San Antonio, Tex., to Lafayette, La.; **Leo A. Herning,** engineer, Universal Oil Products Co., Robinson, Ill., to Palestine; **K. G. Kugler,** engineer, Stanolind Oil & Gas Co., Planfield, N. J., to Cambridge, Mass.; **John F. Dwyer,** engineer, The Texas Co., New York, N. Y., to Pittsburgh 17, Pa.; **Max E. Ferrell,** geologist, Carter Oil Co., Durango, Colo., to Buffalo, Wyo.

D. C. Baker, foreman, The Texas Co., Rangely, Colo., to Cody, Wyo.; **Walter L. Huey,** superintendent, Newton Oil Co., Mojave, Calif., to Rangely, Colo.; **N. J. Gooch,** foreman, Sunray Oil Corp., Bushton to Russell, Kans.; **Charles L. Cochran,** superintendent, Natural Gas Pipe Line Co., Great Bend to Minneola, Kans.

W. L. Carr, geologist, Pure Oil Co. Laramie to Rawlins, Wyo.; **Bruce Echo Hawk,** foreman, Century Geophysical Corp., Anadarko, Okla., to Portales, N. M.; **Edward L. Jones,** engineer, Phillips Petroleum Co., Bartlesville to Okmulgee, Okla.; **M. B. Garman,** engineer, Monarch Gas Co., Oklahoma City, Okla., to Cheyenne, Wyo.; **N. Albert Prince,** engineer, Union Producing Co., Beeville, Tex., to Bossier City, La.

Quentin Quick, chemist, Magnolia Petroleum Co., Dallas to Austin, Tex.; **James W. Nicholas,** engineer, Stanolind Oil & Gas Co., High Island to Houston, Tex.; **William K. Lewright,** engineer, Pure Oil Co., Houston, Tex., to West Lafayette, Ind.; **P. J. McClellan,** foreman, Ohio Oil Co., Knox City, to Benjamin, Tex.; **C. L. Sparkman,** superintendent, Humble Oil & Refining Co., Franklin to Grand Isle, La.

William B. Lumpkin, Jr., foreman, Cities Service Refining Corp., Maplewood, La., to Houston, Tex.; **Edmund Key III,** engineer, Stanolind Oil & Gas Co., Monroe, La., to Marshall, Tex.; **Thomas A. Steele,** engineer, The Ohio Oil Co., West Branch to Reed City, Mich.; **John N. King,** geologist, Phillips Petroleum Co., Trinidad, Colo., to Salt Lake City, Utah.

DEATHS

Ralph E. Wertz, until last March chief executive officer of a group of affiliated gas companies in West Texas, died of heart attack at the age of 72 in Boston, Mass., where he was consulting a heart specialist. Wertz had long been a leader in natural gas and oil activities in the Southwest. At the time of his death he was chairman of the board, Amarillo Oil Co. In 1917 he became vice president of Producers & Refiners Corp. and was responsible for the discovery of a number of oil and gas fields in Wyoming, New Mexico, and Utah. He was a member of the Advisory Committee of American Gas Association in addition to a number of other industrial association groups.

John McLaughlin, 70, retired Magnolia Petroleum Co. official, died September 21 in Dallas, Tex. McLaughlin had been actively engaged in the oil business for 45 years. He retired as vice president and manager of the producing division of Magnolia in 1944.

A. J. Crites, Maricopa, Calif., independent oil operator, died September 26. Word of his death was received at the Independent Petroleum Association of American meeting in San Antonio the day following his selection as I.P.A.A. vice president for northern California.

James T. Neal, 62, assistant secretary-treasurer of National Supply Co., died September 23, in Tulsa. Neal had served continuously with National Supply Co. since 1903 starting as a store boy in Montpelier, Ind.

Malcom M. Morrison, head of Seep Purchasing Agency, died September 21 at his home in Pittsburgh. Morrison had been with South Penn Oil Co., parent organization of Seep Purchasing Agency, for over 40 years, having joined it in 1917.

Lovette A. Albee, 84, retired oil well shooter, died at the Masonic Home in Springfield, Ohio, September 20. Albee was a veteran of many fields but most recently was in charge of oil-well shooting in the Tulsa area.

C. W. Beasley, 61, Beasley Drilling Co., died September 26 in Wichita Falls, Tex. Beasley was one of the first drilling contractors in Texas.

Jack Austin Rhodes, 23, drilling contractor, Abilene, Tex., was killed in an automobile accident September 21, near San Angelo, Tex.

Thomas R. Banks, 48, San Antonio, Tex., consulting petroleum geologist, died September 22 near Freer, Tex.

Ervin R. Robinson, 50, foreman with Sinclair Refining Co. in Houston, died September 23 in Houston.

C. W. Way, 78, retired Houston oil operator, died September 23 in Houston.

SEVEN DISCOVERIES *in Gulf of Mexico*

by Leigh S. McCaslin, Jr.

HIGHLIGHT of the current boom in offshore drilling in the Gulf of Mexico is the discovery in recent months of seven oil or gas-producing areas. The "big Gulf gamble" as Fortune magazine described it, is beginning to pay off.

To date, these successful wildcats being drilled on the Continental Shelf have been confined to Louisiana coastal waters. However, operations are beginning to get under way on a big scale off the Texas coast. Discoveries can be expected in Texas waters in the months to come.

No operator has yet ventured into the shelf area off the Mississippi, Alabama, and Florida coasts. However, 800,000 acres have been leased off Florida and exploration work has been extensive offshore from all three states.

The seven Louisiana offshore discoveries consist of three oilers, three gas wells, and a gas-distillate well. No particular locality has been favored by these discoveries. They range along a 220-mile stretch of Louisiana coast from Vermilion Parish on the west to Breton Sound area on the east. This is in line with the leasing. Lease blocks are scattered along the entire Louisiana coast in about equal density.

The importance of these offshore discoveries becomes even more apparent when compared with land activity. Up until the latter part of August, 17 oil and gas fields had been discovered thus far this year in Louisiana. Four of these 17 fields were in the Continental Shelf area of the Gulf of Mexico.

Ten operators have had interests in the seven wells. These are: Magnolia Petroleum Co., Humble Oil & Refining Co., Kerr-McGee Oil Industries, Inc., Phillips Petroleum Co., Stanolind Oil & Gas Co., Superior Oil Co., Barnsdall Oil Co., Seaboard Oil Co., The California Co., and Callery & Hurt.

Impetus has been given the overall offshore drilling program by the seven discoveries. Currently there are 26 announced locations or active drilling operations in the Gulf. (See accompanying table.)

First Producer Hit

The combine of Phillips, Stanolind, and Kerr-McGee started the parade of postwar Continental Shelf discoveries last November. (Only substantial production found in Gulf Coast Continental Shelf waters prior to the war was by Superior Oil Co. and Pure Oil Co. These concerns have

One of two discoveries of Kerr-McGee Oil Industries, Inc. Magnolia Petroleum Co.

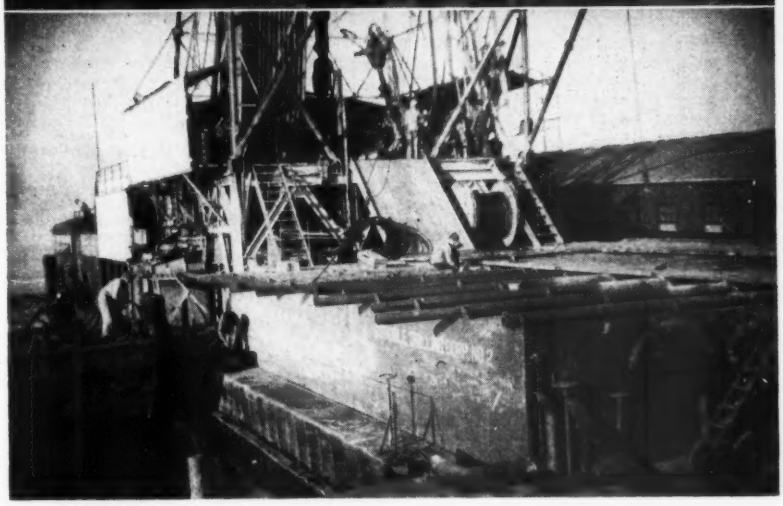
Humble Oil & Refining →

a seven-well field 1½ miles off Cameron Parish, Louisiana, which was discovered in 1938.) The Kerr-McGee et al discovery is located 10 miles off Terrebonne Parish, Louisiana, in Block 32, Ship Shoal area. It came in on November 17, 1947, as a good, commercial 900-bbl.-per-day oil well from pay at 1,700 ft. Since that time, two directional holes drilled from the same platform as the discovery well have also hit pay—one was completed July 13 and the other August 20. The two later producers discovered two new pay sands. Development work continues on Block 32 and additional drilling will be necessary to evaluate the magnitude of the find.

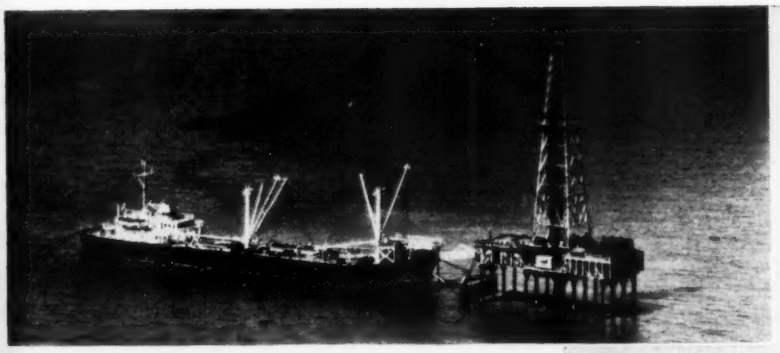
Next successful well after Kerr-McGee's initial success, a gasser, was brought in by Barnsdall, Seaboard, and Callery & Hurt, in April. This well is located in the Breton Sound area a few hundred feet off Breton Island. It is not in open, unprotected waters, but is 11 miles from the mainland. After being drilled to a total depth of 10,600 ft., it was perforated at 4,130-42 ft. and completed for a gas well with initial flow of 2,360 M.c.f. daily through ¼-in. choke. Barnsdall et al currently have an offshore drilling barge under construction for their second try which will be 6 miles north of the Breton Island test.

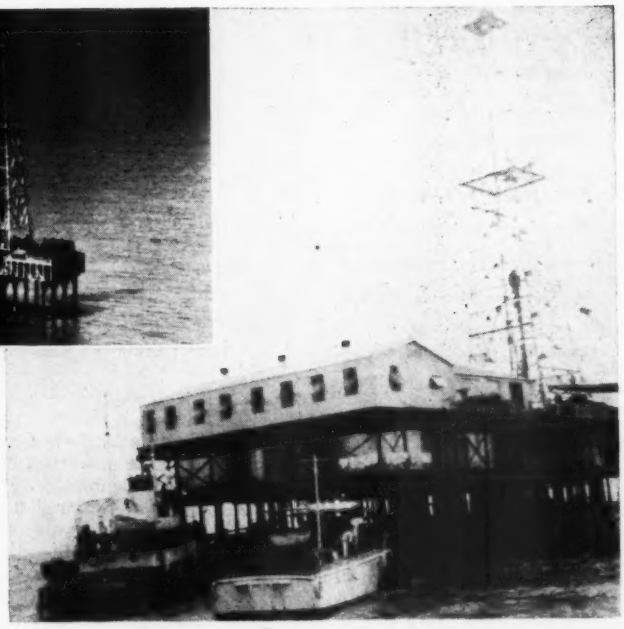
On July 1, Superior completed a gas-distillate well 19 miles off Vermilion Parish for the third success-

Barnsdall Oil Co. →



The California Co. →





What do the new Gulf of Mexico discoveries look like to a visitor? Pictured here from the rig floor, or from the air or water, is the complete lineup to date

Superior Oil Co. →

Louisiana Offshore—A Well-by-Well Report of Operations to Date

Company, parish and area—	Well description	General location—September 10, 1948—Remarks
Kerr-McGee Oil Ind., Inc., Stanolind Oil & Gas Co., and Phillips Pet. Co.:		
Terrebonne, Ship Shoal	1 State Lease 750, Block 28	7½ miles south of shore line—Drilling below 14,475 ft. in hard shale.
Terrebonne, Ship Shoal	1 State Lease 754, Block 32	12 miles south of Point au Fer production and 10 miles out in Gulf—Oil well completed November 14, 1947, TD 2,568 ft., perf. 1,734-50 ft., 600 bbl. per day 25° gravity.
Terrebonne, Ship Shoal	2 State Lease 754, Block 32	Same platform as No. 1—Oil well completed July 13, 1948, TD 3,238 ft., perf. 2,808-24 ft., 700 bbl. 27.7° gravity.
Terrebonne, Ship Shoal	3 State Lease 754, Block 32	Same platform as No. 1—Oil well completed August 20, 1948, TD 3,398 ft., perf. 1,758-74 ft., 960 bbl., 25.6° gravity.
Terrebonne, Ship Shoal	4 State Lease 754, Block 32	Same platform as No. 1—Location.
Kerr-McGee Oil Industries, Inc.:		
Cameron, West Cameron	1 State Lease 1123, Block 33	3 miles offshore and 12 miles east Creole field—Drilling, running electric log to 2,020 ft., 14,000-ft. test.
Magnolia Petroleum Co.:		
St. Mary, Eugene Island	1 State Lease 673, Block 58	6 miles from Point au Fer field—Dry, completed April 4, 1947 TD 12,874 ft., orig. hole, ST TD 11,714 ft.
Terrebonne, Ship Shoal	1 State Lease 766, Block 72	8 miles south of Coon point—Gas well completed August 1, 1946 TD 9,355 ft., perf. 7,266-76 ft., 1,992,000 cu. ft. gas, shut in.
St. Mary, Eugene Island	1 State Lease 684, Block 94	23 miles south-southwest of Rabbit Island field—Dry, completed July 9, 1947, TD 2,613 ft. in salt, top salt 2,606 ft.
Iberia, Eugene Island	1 State Lease 686, Block 110	29 miles from nearest point on shore—Drilling, spudded September 8, 1948, 13,000-ft. test, 14,000 ft. SE of Block 94, shallow salt dome discovery.
Iberia, Eugene Island	1 State Lease 838, Block 45	12 miles southwest of Rabbit Island, 12 miles from nearest point on shore line—Gas well, TD 13,636 ft., perf. 11,351-58 ft. for test, 1 hr. drill-stem test at 11,376 ft., flowed 447,000 cu. ft. gas.
St. Mary, Eugene Island	1 State Lease 676, Block 62	13 miles south-southeast of Rabbit Island field—Coring at 2,267 ft., spudded July 8, 1948, 3,000-ft. test.
St. Mary, Eugene Island	1 State Lease 679, Block 77	13 miles southeast of Rabbit Island field—Location, 3,000-ft. test
Terrebonne, South Pelto	1 State Lease 791, Block 11	9 miles south of Lake Pelto production and that distance south of nearest point on shore line—Location, 12,000-ft. test.
Terrebonne, Ship Shoal	2 State Lease 766, Block 72	Same platform as No. 1—Driving piling 13,000 ft.
Humble Oil & Refining Co.:		
Jefferson, Grand Isle	1 State Lease 801, Block 18	8 miles off Grand Isle—Oil well, completed August 11, 1948, TD 8,951 ft., perf. 8,640-45 ft., 878 bbl. 33° gravity.
Jefferson, Grand Isle	2 State Lease 797, Block 9	6½ miles off Grand Island—Location, derrick and platform damaged in hurricane September 4, 1948, 5,000-ft. test.
Jefferson, Grand Isle	3 State Lease 801, Block 18	8 miles off Grand Isle—Drilling 3,020 ft. in shale and sand in sidetracked hole.
Jefferson, Caminada Pass	1 State Lease 799, Block 16	Drilling—Original hole junked to sidetrack at 3,500 ft., 14,000-ft test.
Jefferson, Caminada Pass	2 State Lease 803, Block 22	9 miles off Grand Isle—Location, platform and derrick destroyed by hurricane September 4, 1948.
Plaquemines, Tiger Pass	1 State Lease 818, Block 77	Drilling—Spud August 17, 1948, WOC 3,501 ft.
Plaquemines, West Delta	1 State Lease 819, Block 30	8 miles offshore and 12 miles south of Bastian Bay field—Waiting on rig, 5,000-ft. test.
Plaquemines, West Delta	2 State Lease 819, Block 30	1 mile southwest 1 State Lease 819, Block 30—Waiting on rig, 14,000-ft. test.
The California Co.:		
Plaquemines, West Delta	1 State Lease 816, Block 24	6 miles south-southwest of Venice production and 1¾ miles offshore—Dry, completed July 20, 1948, TD 12,611 ft.
Plaquemines, Main Pass	1 State Lease 1276, Block 69	6 miles east of Delta Duck field production—Oil well, completed August 9, 1946, TD 9,254 ft., perf. 5,848-57 ft., 216 bbl. 26.2° gravity.
Plaquemines, West Delta	1 State Lease 822, Block 34	10 miles south of shore line—Building platform, 12,500-ft. test.
Superior Oil Co.:		
Vermilion, Vermilion	1 State Lease 884, Block 71	22 miles south of Fresh Water Bayou field and 19 miles offshore—Gas-condensate well, originally abandoned, TD 13,628 ft., reworked and drilled out to TD 9,680 ft., perf. 9,608-18 ft., 53 bbl 51.4°, and 7,024,000 cu. ft. gas daily on test.
Vermilion, Vermilion	2 State Lease 884, Block 71	Same platform as 1 State Lease 884, Block 71—Fishing, 10,000-ft test. Fishing at TD 9,884 ft.
Stanolind Oil & Gas Co.:		
Cameron, West Cameron	1 State Lease 1133, Block 45	10 miles from shore—Drilling, spudded August 12, 1948, 13⅜-in at 2,480 ft., drilling 3,359 ft. in shale, 12,500-ft. test.
Terrebonne, Ship Shoal	1 State Lease 757, Block 38	7 miles offshore and 1,000 ft. northwest of Texas Co. 5 State-Coon Point, blowout gas well drilled in 1941—Location, 13,000-ft. test
Barnsdall Oil Co., Seaboard Oil Co., and Callery & Hurt:		
Plaquemines, Breton Sound	1 State Lease 1230, Block 36	11 miles northeast of Grand Bay field production—Gas well, completed April 1948, TD 10,600 ft., perf. 4,130-42 ft., 2,360,000 cu. ft. gas, ¼-in. choke.
Pure Oil Co.:		
Vermilion, Vermilion	1 State Lease 880, Block 39	8 miles offshore and 14 miles southeast of Pecan Island gas field production—Drilling, shut down at 658 ft., bad weather, 12,000-ft. test.

ful wildcat. This well was first drilled in 1947 and temporarily abandoned on January 1, 1948. On June 12, Superior went back in and started reworking the well. Result was a gas-distillate producer. Original total depth was 13,628 ft. In the rework job, the well was perforated at 9,608-18 ft. resulting in an initial daily production of 65 bbl. of 52°-gravity condensate and 7,024 M.c.f. of gas. From the same platform, Superior is drilling a directional test which is slated to bottom in the same pay 2,000 ft. northeast of the discovery.

Fourth well to hit pay was The California Co.'s wildcat in the Main Pass area off Plaquemines Parish. On August 9, the test was completed for 216 bbl. daily of 26.2°-gravity oil through perforations at 5,848-57 ft. The concern plans a second well from the same platform in the immediate future.

Two days after the California discovery, Humble Oil & Refining Co. became the next successful offshore

Texas Offshore—A Well-by-Well Report of Operations to Date

Company and county—	Well description	General location—September 10, 1948—Remarks
Stanolind Oil & Gas Co.:		
Galveston	1 State Tract 144	12 miles southeast Port Bolivar, 12 miles south Caplen field production—Piling.
Galveston	2 State Tract 144	Just west of 1 State Tract 144—Location, 5,000-ft. test.
Humble Oil & Refining Co.:		
Brazoria	1 State Tract 278	6½ miles offshore south of Oyster Bay—Location, 12,000-ft. test
Melben Oil Co. (Ohio Oil Co. and Benedum-Trees):		
Brazoria	1 State Tract 248	6 miles offshore and 8 miles south of San Luis Pass—Location.
Tidelands Oil Corp. and Superior Oil Co.:		
Matagorda	1 State Tract 483	3 miles off Matagorda Peninsula and 15 miles east of Port O'Connor—Drilling below 5,500 ft., 7,500-ft. test.
Stanolind Oil & Gas Co., Ohio Oil Co., and Melben Oil Co.:		
Galveston	1 State Tract 245	9 miles off West Beach, Galveston Island—Location.

producer. Its wildcat 8 miles in the Gulf of Mexico off Grand Isle flowed 878 bbl. daily of 33.3°-gravity oil through ¼-in. choke from perforations at 8,640-65 ft. Test was drilled from a $1,200,000 platform in 50 ft. of water.

The third discovery in August and the sixth in the present offshore campaign, was made by Magnolia Petroleum Co. Its test in the Ship Shoal area, 8 miles south of Coon Point, flowed 1,992 M.c.f. of gas daily through a 12/64-in. choke and perforations at 7,266-76 ft.

The next day after the completion of its Ship Shoal discovery, Magnolia found gas production in another test 50 miles to the northwest. This well, in the Eugene Isle area and 12 miles offshore, flowed 447 M.c.f. of gas on 1-hour test through perforations at 11,351-58 ft. Further testing is to be done.

Two Primary Problems

The opening of significant production in the offshore area has raised many questions and created many problems. However, at present, the two primary concerns of operators with production are probably (1) the question of an allowable which will make offshore drilling economically possible, and (2) the best method of handling the produced oil—in other words, how and where to store, measure, and test it, and how to get it ashore.

Presently Louisiana allowables are based on the depth of the production. On such a basis, Kerr-McGee's three wells, for instance, would have very small allowables of 76, 90, and 76 bbl. Most operators contend that such allowables will not permit the development of offshore reserves. The high costs and extraordinary hazards of offshore drilling are cited as the reasons.

In a recent hearing at Baton Rouge before the Conservation Commission, a number of operators recommended that an extra production "bonus" or "risk compensation" be added to the depth allowable. As a temporary measure, the Conservation Commission has already granted special allowables to some offshore producers. The outcome of the Baton Rouge hearing is awaited with interest. A satisfactory solution of the allowable question is important to the future of offshore drilling.

An attempted solution for the second major problem—that of handling the produced oil—is probably premature at this stage. Before a pipe line can be laid or expensive storage facilities built over water, it will be necessary to know the amount of oil to be handled. At this stage of the game, none of the operators has more than a general idea as to the size of the reservoir he has tapped. It will require development drilling around the discoveries to give the reservoir engineers and geologists sufficient information to estimate recoveries.

Offshore drilling costs are high. The largest and most expensive platform built to date—that of Humble at Grand Isle—cost $1,200,000. To the platform cost must be added cost of the actual drilling equipment and the time and materials necessary for drilling wells.

Even the barge-platform method of drilling, which is cheaper than the platform method (initially, at least) involves huge expenditures. The Coast Guard YF steel barge used by Kerr-McGee for its Block 32 discovery well was purchased as war surplus for $75,000. Another $155,000 was necessary to convert the barge for drilling operations, not including the actual drilling equipment. Added to the costs was $240,000 for the drilling platform.

Various estimates have been made of the total expenditure made to date by the oil industry in its drilling and exploration program in gulf waters. A reasonable figure seems to be around $70,000,000. This would be divided as follows: Drilling costs, $29,000,000; lease bonuses, $25,000,000; and exploration, $15,000,000.

This investment makes the Gulf of Mexico one of the "hottest" oil areas in the United States. There is good reason for this "gamble." No accurate estimate can be made of the oil which might be found in the area. However, many authorities have devised figures to be used as a yardstick. These cover a wide range. One guess of 4 billion barrels has been ventured. Another expert has proposed 5.8 billion barrels "merely as a rough yardstick." A geologist has said that if the density of salt domes offshore coincides with that onshore, a figure of 10.5 billion barrels is reasonable for the Texas and Louisiana coasts alone.

References

"Drilling, Rigging Up, or Erecting Structures Presently Under Way on 21 Locations Along Continental Shelf in Gulf of Mexico," Neil Williams, p. 152, The Oil and Gas Journal, June 24, 1948.

BOOKS

COOPERATIVES IN THE PETROLEUM INDUSTRY. PARTS 1, 2, 3, and 4. Published by Petroleum Industry Research Foundation, 122 East 42nd Street, New York City. $3.

This report was prepared for the Empire State Petroleum Association and the Illinois Petroleum Marketers Association. Part 1 is entitled "Observations of the Cooperative Movement," and is authored by Ludwig von Mises. He observes that perhaps in no other field is the growth of cooperatives so much the result of specifically American conditions as in the distribution, refining, and production of petroleum. Part 2, by K. E. Ettinger, reports on petroleum cooperatives in action. Charts in color, and convenient tables enliven the discussion. Part 3, by Robert H. Montgomery and James O. Wynn, discusses the exemption of cooperatives from federal income taxation, while Part 4, by Berry Wall, reports on what the people of co-opland think of petroleum cooperatives. The publishers declare that in attempting to present a complete and a true picture, they have not confined themselves to a discussion of historical aspects based on literature and available business reports. They conducted a series of interviews with people in the centers of cooperative expansion, which interviews give a more vivid picture than any theoretical conclusions of the hopes, beliefs, and fears of the sector of the public that lives with petroleum cooperatives.

GATX.—1898-1948. A HISTORY OF THE GENERAL AMERICAN TRANSPORTATION CORPORATION. By Ralph C. Epstein, Ph.D. 198 pp.

In this volume are set forth the principles on which, according to the prologue, "General American has grown and prospered. The book is not a history, not a biography. But business is always carried on by men; and for this reason, frequent references to personalities is both incidental and deliberate. The . . . effort here is to chronicle the development and to analyze the present status of the business, not just to praise it. How and why has the tree grown? How has the character of its soil changed? What are its scions and what its fruit? What limbs have been pruned off, where do its branches spread, and what are the directions of their present growth?"

Handling Sulfuric Acid Sludges

*by E. L. Hildebrand**

THE chemical treatment of oils by sulfuric acid dates back to the time when illuminating oil was "coal oil." Acid treatment has become quite common in the petroleum industry and no generally useful substitute has been found. The handling of sulfuric acid in acid treating, alkylation, and acid reclaiming presents nearly every baffling question a corrosive chemical can provide.

The major problems are not encountered in the treating and alkylation units proper, but in the auxiliary equipment necessary for acid separation, reclaiming, reconcentration, and disposal of byproducts, principally acid sludge. This is due to the fact that concentrated sulfuric acid at low temperature is not particularly corrosive to steel, but the diluted acid is extremely so. Also, sulfuric acid has a strong affinity for water, grabbing up all that is readily available, thereby sometimes becoming diluted through no intent of the user.

The question of what is "strong" and "weak" acid is highly debatable; however, it is generally conceded that strong acid will not attack carbon steel severely at atmospheric temperature, but weak acid will. This roughly locates the distinction between 60 and 80 per cent H_2SO_4 by weight and further qualification of this point depends upon other factors affecting corrosion such as temperature, oxygen content, velocity and turbulence, inhibiting qualities of entrained inerts, etc.

Acid Treating and Formation of Sludges

Concentrated black acid is supplied to alkylation plants to treat alkylate blending stock for motor or aviation gasoline; to propane lube plants for treating lubricating oils in propane solution; and to lube-oil agitators for treating low-cold-test lubricating oils. Spent alkylation acid is used at light-oil treaters for treating heavy naphthas, and naphthas from high-sulfur refined oils. Some spent alkylation acid is also used at lube-oil agitators.

These oils are acid treated for one or more of the following purposes:

1. To improve color.
2. To remove sulfur.
3. To improve odor.
4. To remove gum-like, resinous, and asphaltic substances.
5. To improve stability on exposure to light and air.
6. To change properties of oil, such as viscosity index, carbon residue, etc.

In the acid treatment of oil, which normally requires further chemical treatment, an acid-bearing sludge is formed. This sludge consists of polymers, asphalts, and other carbonaceous materials, all of which are practically insoluble in oil. The sludge is settled from the oil as completely as possible and the two layers are separated as nearly as practical.

Since in our operations some 75 tons per day of sulfuric acid is used in acid treating alone, it is desirable to recover as much of this chemical as possible. In order to effect this recovery, sludge is mixed with water in a cylindrical, cone-bottomed, lead-lined vessel called a sludge kettle. A temperature of approximately 220° F. is attained by acid dilution and/or open steam coils and the charge is agitated for a period of time. It is then allowed to stand until the sludge and dilute acid form separate layers. The acid is drawn off and sent to the acid concentrating plant and the sludge is pumped to tanks for boiler fuel.

The foregoing is a simplified description of the hydrolysis process. Actually, considerable difficulty is encountered in acid treating and hydrolysis because of emulsions, frothing, sludge solidification, and the like. Normally a heavy sludge is fluxed with lighter sludges to maintain a consistency suitable for pumping.

Disposal of Acid Sludge

From the kettle the sludge is pumped to other cylindrical, lead-lined, cone-bottomed tanks. Here further acid separation is effected by additional agitation. The acid is again separated as explained above, and the sludge is delivered to the boilers as fuel. The average daily consumption of sludge for fuel in a given month was 2,000 bbl. (714,000 lb.). Kettle sludge weighs approximately 8.5 lb. per gallon and has a heating value of approximately 10,000 B.t.u. per pound. In spite of this fact, the economics of using the sludge as fuel are not particularly attractive; the sludge is burned to dispose of a byproduct more than to save fuel.

Corrosion Problems

As previously stated, low-temperature strong acid is not particularly troublesome, but acid below 60 per cent by weight is extremely difficult to handle. There are only a few materials which are not attacked by it and unfortunately these are either much too expensive or lack the necessary physical properties. Therefore, manufacturers offer a wide variety of equipment, pipe, valves, etc., made of lead, bronze, brass, Monel, and ferrous and nonferrous alloys high in nickel, chromium, and molybdenum. In addition, there is carbon, pottery, glass, high-silicon iron, and the like, the use of which is limited because of the lack of suitable physical properties. Each of these materials probably has its economic position somewhere in the wide range of conditions which must be considered individually and collectively in various combinations for the best selection in each case.

Lead is probably the most universal material used to retain weak sulfuric acid. Although lead has good corrosion resistance, its physical characteristics are such that additional support is required; thus lead is used as a lining for tanks, sludge kettles, and other steel vessels. It sometimes becomes necessary to protect the lead lining from high temperature, abrasion, etc., and a second lining of ceramic or other inert material is added, a procedure making an extremely expensive installation.

Valves, pipe, and pumps give perhaps the most trouble in weak acid and acid sludge service. Examples of the problems encountered and corrective measures taken follow:

Pipe.—Practically all lines handling acids and sludges have given trouble in varying degrees. As would naturally be assumed, the most difficult has occurred where temperatures are high.

One particularly troublesome service is the gathering system for the weak acid separated from the sludge in the kettles. In one portion of the system acid strength varies from 35 to 60 per cent, while in other parts the range is from practically zero to 35 per cent. The temperature of the acid varies from 150° to 230° F., but the lines are intermittently exposed to temperatures in excess of 330° F. when steam at a pressure of 150 lb. is used to displace "plugs" of sludge. For a number of years, lead pipe has been used for this service, but the results were far from satisfactory due to ruptures and also failures of the lead adjacent to the steel slip-on flanges. This is the least expensive installation that can be made, but maintenance costs are high, interruptions to acid movement are frequent because of repairs, and hazards exist when the lines are blown out with steam to displace sludge.

In an attempt to overcome these limitations, sometime ago a portion of the system was replaced using steel pipe with a bonded lead lining. This was much better from a safety standpoint, but was even more un-

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satisfactory than the all-lead installation from the standpoint of maintenance. For example, in a period of 4 months, 10 leaks were experienced in one 100-ft. section of 6-in. pipe which was less than 1 year old. Extra-strong brass pipe has also been used in the gathering system, but the life is only slightly longer than that of lead pipe or bonded pipe and the cost is greater. Of the various materials used, on which records have been maintained, no entirely satisfactory installation has yet been made.

Three possible means of eliminating the expensive and troublesome repairs and replacements are:

1. Reduce the temperature of the weak acid, so that the usual materials of construction, such as lead or brass, will be satisfactory.
2. Provide materials of construction which will resist weak acid at elevated temperatures. These materials include glass, ceramics, tantalum, etc.
3. Provide combinations of the above materials of construction such as bonded lead pipe with Karbate sleeves.

The first method (reducing the acid temperature) is impractical from an operating standpoint. The second method is often impractical, due to the fragility and/or cost of glass, ceramics, and the rare metals. The third method, bonded lead pipe with Karbate sleeves, is considered at present to be the most promising solution. This opinion is based on the success of this design in the isobutylene extraction units of a butyl rubber plant handling 45 per cent sulfuric acid at temperatures of 300° F. where bonded lead pipe had a service life of only 6 weeks.

The Karbate serves a manifold purpose. Its insulating effect keeps the lead at a temperature at which acid corrosion is negligible; erosive removal of protective corrosion products formed on the surface of the lining is prevented; and perhaps most important, the lead is mechanically restrained so that buckling and consequent cracking or tearing (one of the chief causes of failure) is virtually eliminated.

At present a considerable amount of lead-lined-Karbate-lined steel pipe is installed in the weak-acid gathering system. It is hoped that this experimental installation will overcome successfully the troubles experienced previously. However, because of the high cost of the materials and fabrication, and because the line size must be increased to compensate for the reduced inside diameter brought about by the liner, this type installation is quite expensive.

The line used in transferring sludge from the sludge kettles to the boiler house has also been somewhat of a problem. This line handles sludge at a temperature of 130° to 210° F. with a maximum pressure of 375 psi. The acidity varies from practically zero to 55 per cent H_2SO_4. Extra-heavy red-brass pipe has had a useful life of approximately 5 years in this service. Five hundred feet of bonded lead-lined pipe was tried in this line, but the results were very unfavorable. Circumferential cracks occurred in the lead adjacent to the flanges and collapse of the lead lining occurred at several points. Repairs were required after only 2 months and complete replacement was necessary in less than a year. Failure of the lead was believed to be due, in part, to the high sludge temperature and in part to the use of 145-lb. steam for clearing the line after each pumping.

Valves.—For the past 3 years an extensive survey has been under way to find the most suitable valve materials for acid sludge and weak acid. Factors involved in this survey include: (1) cheapest and most available material that would give the desired results; (2) a material that would be the most resistant throughout the range of acid strengths and temperatures; (3) a material that was readily repairable, i.e., weldable; and (4) a material that was strong structurally, as well as resistant to corrosion.

Over 100 test installations have been made and followed during the 3-year period. Twelve different materials or combinations of materials have been included in the survey. The materials tested or in the process of being tested include: brass, Monel, lead, Aloyco "20," Pioneer metal, Causal metal, Everdur, porcelain, Duriron, Hastelloy "B," Hastelloy "D," and plastics.

The most severe valve service encountered is in the sludge-kettle area and primarily at two 4-in. outlets in the cone bottom of the kettles. Weak acid and hydrolyzed sludge are drawn off through these outlets. Acid strengths vary between 35 and 55 per cent H_2SO_4 at temperatures between 200° and 245° F. Monel-trimmed brass gate valves have proved to be the most satisfactory of those tested in this service. These valves have given from 5 to 6 months' service in the most severe conditions and as high as 10 to 11 months in less severe conditions. Brass gate valves with Monel trim are repaired on the average of three times before the body corrodes to the retiring thickness.

In positions where positive shutoff is not essential, i.e., drain lines, etc., both Monel-trimmed brass gate valves and lead-lined cast steel valves have proved satisfactory, giving approximately 12 months' service. The lead-lined valves are of the Y-pattern. As the lead seats are easily damaged by solids in the fluid, they cannot be depended on for tight closure. Drain-line conditions are essentially the same as kettle outlets, i.e., 35 to 55 per cent H_2SO_4 at temperatures of 190° to 220° F. A plastic-lined plug cock is on trial installation in a drain line.

In a service handling 220°-230° F. acid sludge containing approximately 5 per cent by weight 45° Be. sulfuric acid, Monel-trimmed brass gate valves were the most economical installation tested. Two Aloyco "20" valves tested in this service had a comparable service life but cost more initially. In weaker acid strengths at lower temperatures, Causal metal, Aloyco "20," Pioneer metal with Hastelloy "B" trim, brass with Monel trim, all gave promising results.

Structural weaknesses of porcelain and Duriron valves did not permit a satisfactory test. Both test valves were of the plug-cock type, employing the use of split malleable-iron flanges and glands. Corrosion of the malleable iron from leaks and fumes was severe. Both valves were broken by too rough handling. A Duriron gate valve also proved impractical.

The packing problem for valves in acid service has been practically eliminated by the use of an asbestos inserted rubber pump packing, and lengthening of the stuffing box to accommodate two additional rings of packing. Average frequency of packing has been decreased from once every 3 to 4 weeks to once every 3 months. Teflon has been used in two valves with excellent results; however, the high initial cost does not warrant general use at the present time.

Sludge pumps.—Bronze is used frequently as a sludge pump material. At present, all of the sludge pump liquid ends are leaded bronze (80 per cent Cu; 10 per cent Pb; 10 per cent Sn.). It is a common belief that this alloy is particularly resistant to acid by token of its lead content. Actually this is far from true. The alloy is more readily available because it is one of the most readily castable and machinable. In the solid state the lead is present as free lead. In this form it enhances no corrosion-resisting properties, and actually may aid corrosion in the establishment of galvanic cells between the lead globules and the base metal.

Lead bronzes are also extremely difficult to oxyacetylene weld or braze because the lead "sweats" to the surface at temperatures above 620° F. Unstable lead oxides formed at higher temperatures also interfere. Welding can successfully be done with electric-arc methods using coated rods, but this method is slow.

All sludge pumps are steam-driven duplex reciprocating types. Liquid ends of 80-10-10 alloy last from 2 to 8 years and are repaired about three times during that time. The most common repair is building up and remachining the threads receiving the valves of plate type pumps. Pot valve type pumps give considerably less trouble and replacements are being made of this design.

Pump valves are usually either the type with hemispherical seats or the wing-guided type and are generally

(Continued on page 90)

1947 Geophysical Activity in the United States

*by E. A. Eckhardt**

This authoritative summary of geophysical activity is presented in advance of its publication in the October "Geophysics," by special permission of the Society of Exploration Geophysicists.

IN 1947, the oil industry of the United States produced 2.011 billion barrels of crude oil and natural-gas liquids. The same number of barrels of new oil must be discovered in 1 year if the industry is to maintain its reserves. This provides a measure of the exploration job to be done.

The report for 1947 of the Committee on Petroleum Reserves of the American Petroleum Institute indicates that the job was done, with something to spare. That geophysical techniques made a major contribution to this result is hardly subject to doubt.

In 1947, the oil industry spent a minimum of $105,000,000 on geophysical work alone in prospecting for additional oil reserves within the continental boundaries of the United States. The figure may actually be substantially greater. This represents a new peak for such expenditures. Both increased units of operation and increase in unit costs contribute to the record size of the bill. The industry itself realizes, and the public must understand, that additional millions, adding up to a substantial total, were required to cover land, drilling, and other necessary exploration costs.

About 90 millions of the $105,000,000 total were spent on seismograph operations, the balance for other types of geophysical work, chiefly gravity surveys.

The steady upward trend of seismograph parties operating in the United States, which began in mid-1941, has continued through 1947 down to date with relatively minor fluctuations. In this period, the number of seismograph parties in service has more than doubled. In face of an acute shortage of suitably trained technical personnel, this represents a truly stupendous accomplishment.

*Vice president, Gulf Research & Development Co., Pittsburgh.

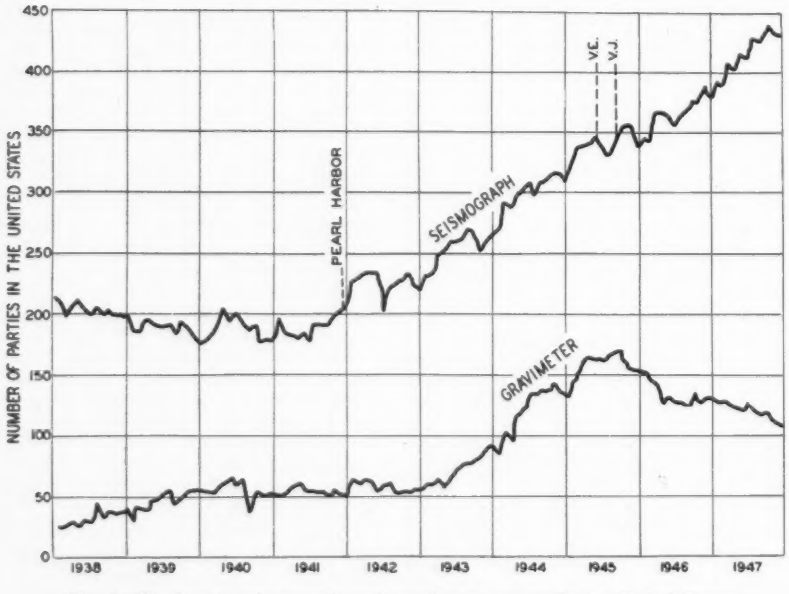

Fig. 1—Number of seismograph and gravimeter parties in the United States

The pie chart (Fig. 3) shows the distribution of the 1947 seismograph work over the country. It is a striking fact that very nearly three-quarters of it was done in the states of Texas, Louisiana, and Oklahoma. These are the very states in which seismograph work had its beginning and early development almost 25 years ago. They are also the states which the A.P.I. Reserve Committee credits with five-sixths of all the new pool reserves discovered in the United States in 1947. The Rocky Mountain states account for about half of the remainder, and the remainder is scattered over the active and prospective areas elsewhere.

Louisiana, Texas, Offshore Work

Special mention should be made of the offshore seismograph work along the coasts of Louisiana and Texas. In the charts, it is included in the totals for Coastal Texas and Coastal Louisiana. In the former case, it represents about one-sixth of the total, and in the latter about one-third. This work during 1947 reached a substantially higher level compared to the preceding year.

Gravity operations followed a somewhat different pattern. For several years prior to Pearl Harbor, the gravity parties in service averaged some 50 odd in number. In 1942, the average was slightly higher, followed in 1943, 1944, and 1945 by a spectacular rise of roughly 200 per cent to a peak of 170 parties, which was reached about V-J Day. Since then, there has been a gradual and steady decline which has persisted through 1947. The average number of parties during 1947 was about 120.

About one-quarter of the 1947 gravity work in the United States was done in the coastal areas of Texas and Louisiana, and a slightly greater amount in the inland areas of the same states. The Rocky Mountain states accounted for another quarter, and the remainder was scattered as indicated in the pie chart of Fig. 2.

In the case of the coastal areas of Texas and Louisiana, the gravity work done offshore represented a substantially smaller proportion of the total than was the case with the seismograph. About three-quarters of

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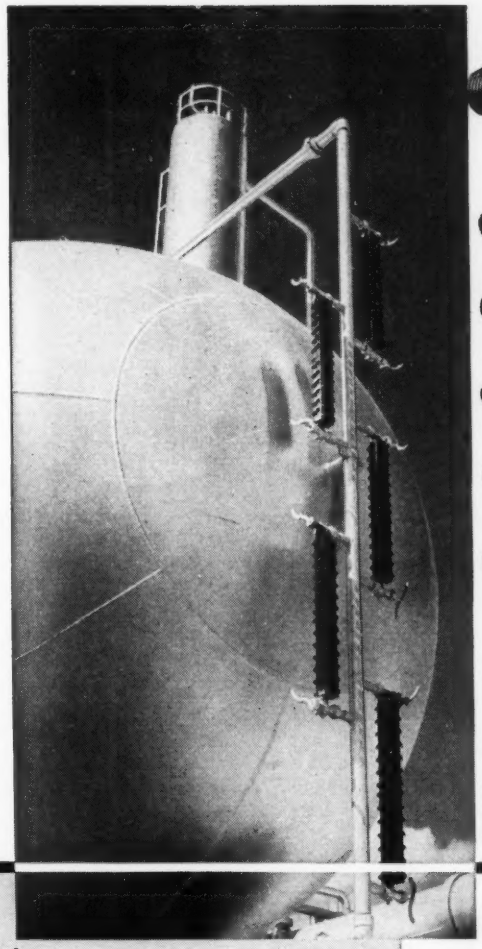

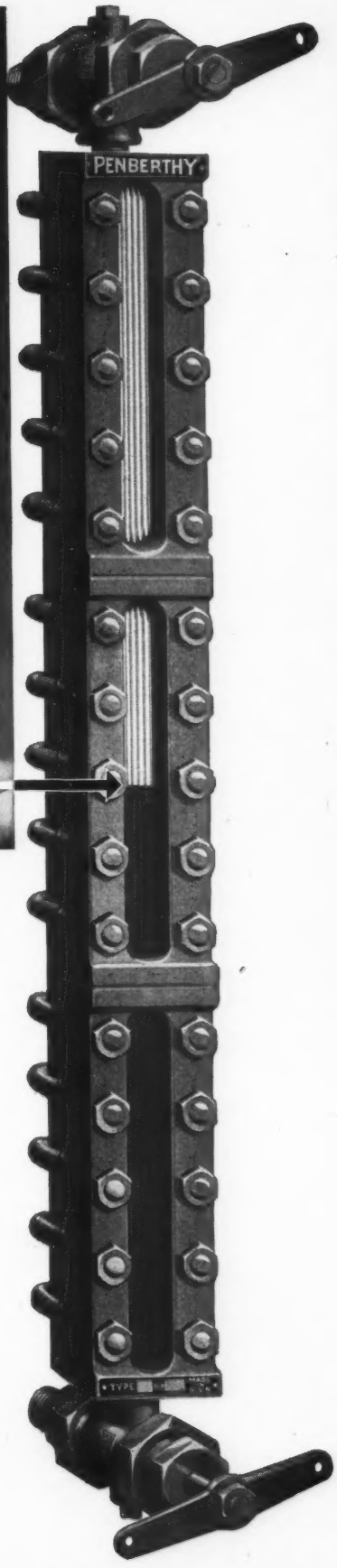

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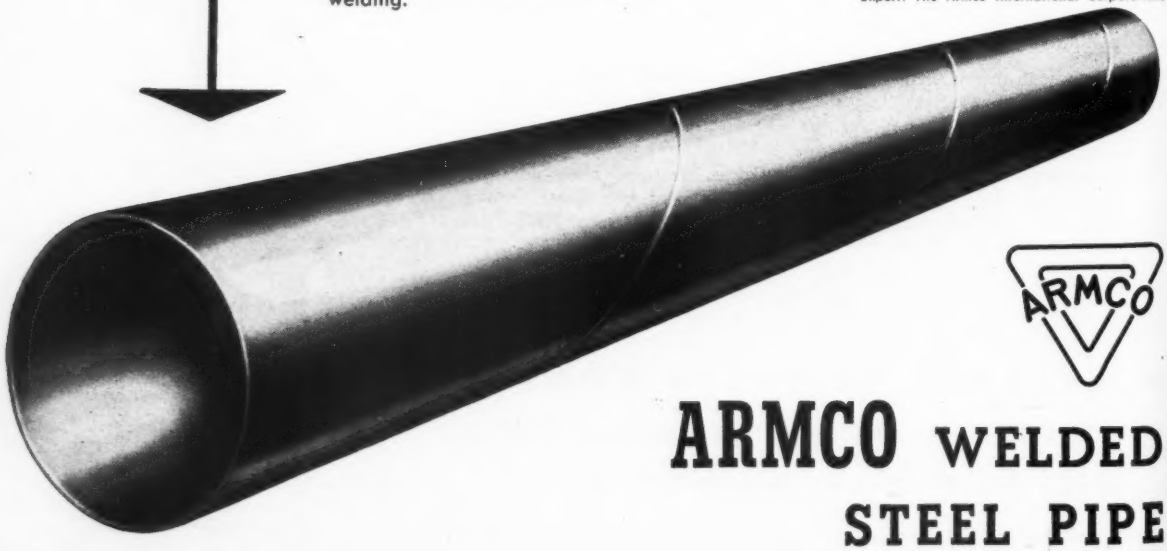

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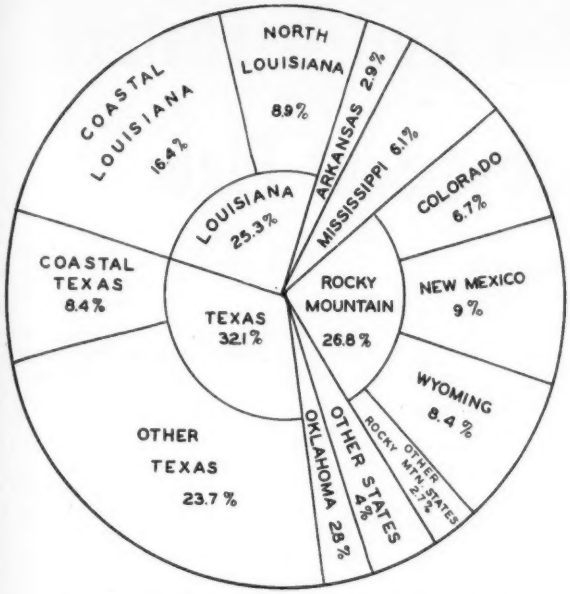


Fig. 2—Gravity operations in the United States in 1947

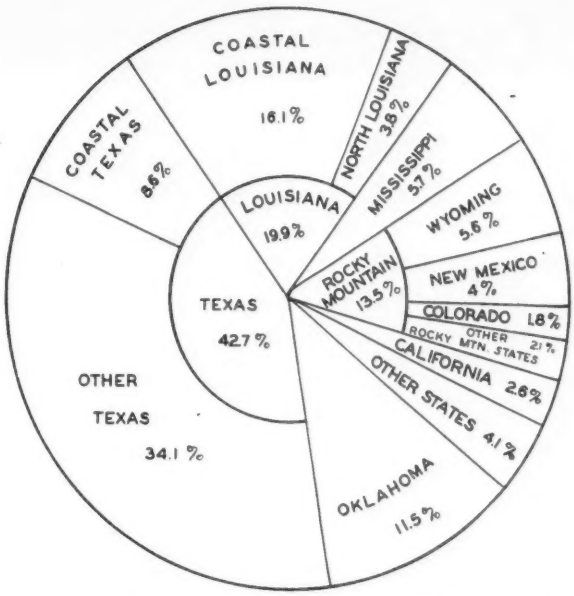


Fig. 3—Seismograph activity in the United States in 1947

this work was done in Coastal Louisiana.

The year 1947 was the first full year of commercial air-borne-magnetometer operations. Although the major use of this new arrival in the geophysical family occurred outside the United States, a substantial number of commercial surveys were made in 11 of the states for both oil and mining interests. The Rocky Mountain states were the scene of a substantial part of this work.

Use of this new facility may be expected to be extended and broadened as the place of this device in the general prospecting program is better understood. Experience indicates that five aircraft engaged in aeromagnetic surveying could run as much profile as did all the seismograph parties operating in the United States last year. This comparison is of value only in illustrating the high speed and low cost with which such data can be obtained. Seismograph data and magnetic data are, in general, not competitive, but play supplementary and coordinate roles in the over-all prospecting effort. The comparison made, however, indicates that a very few aircraft will be sufficient to satisfy any conceivable demand for aeromagnetic surveys. It may be of interest to note that 9 of the 10 oil companies, which were the most active geophysical operators in 1938, appear in a similar list for 1947, and that 7 of these are listed among the 10 companies having the greatest United States reserves.

The 105-million estimate does not include the sums which have been spent in 1947 on geophysical research and development. There is no basis for estimating the amounts which have been so spent, but there is no doubt that they are measured in millions. It is not often that the results of such work lead to immediate application, and their full value is often not fully realized for several years, even by the organization which has done the work. The project usually are based on some recognized need or some visualized advantage. They become known by the papers presented at conventions and the use made of the developments in the field. The progress of the art is strongly dependent on an adequate volume of both short and long range research.

In some quarters geophysicists appear to be regarded as magicians and although their pockets are not obviously bulging, one readily encounters a feeling that more white rabbits should be produced, and one hears and reads much speculation on what the next one will be like. Most geophysicists feel that they are not in the white rabbit business. For the past 25 years, they have been actively engaged in aggressively and systematically studying all physical measurements which could conceivably be made on land, sea, or air and which would give information about the nature and disposition of the rocks which cannot be seen or easily exposed to view. They have devised technically sound and economically attractive means for making those measurements which are the most informative. In doing so, they have made substantial improvements in related methods of survey and transport. Genius has been defined as consisting of one part inspiration and nine parts perspiration. On this basis,

(Continued on page 101)

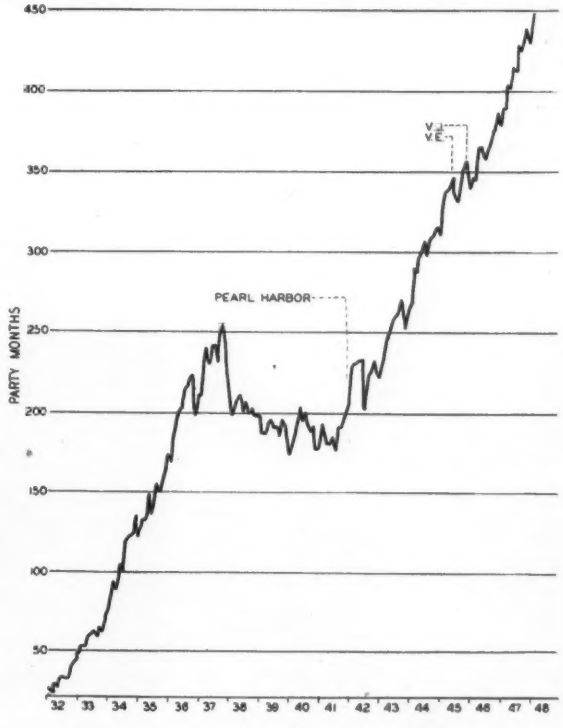
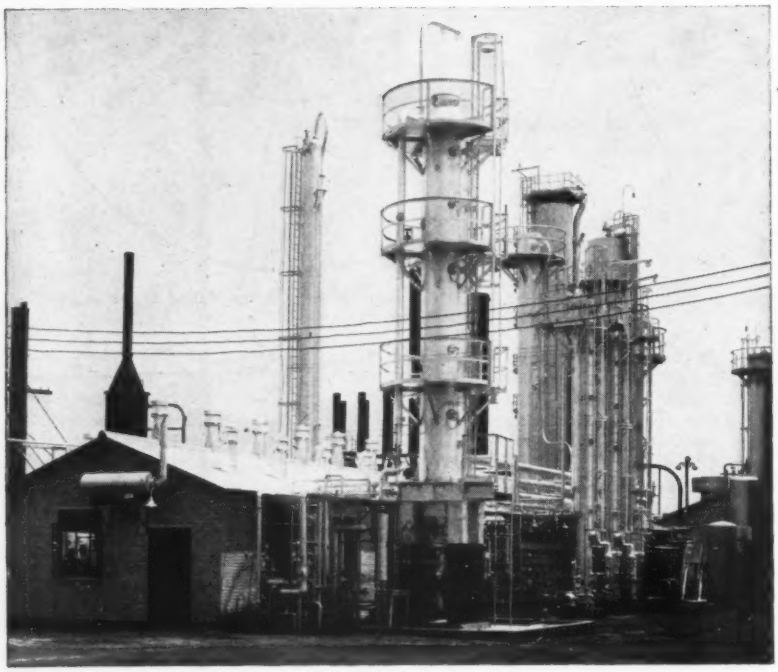


Fig. 4—Seismograph parties in the United States

Catalytic Polymerization Unit Is Feature Of McMurrey Improvement Plan

by D. C. DeLoach*



View of straightrun stabilizer and U.O.P. poly unit

THE latest processing facility to be installed in the Tyler, Tex., plant of McMurrey Refining Co. under its long-range expansion and improvement program has been recently placed in operation. The new facility, a U.O.P. catalytic polymerization unit, was erected by McMurrey's own construction department and designed by Universal Oil Products Co. engineers.

Charge stock to the poly unit, of the chamber type having a single tower and multiple catalyst beds, is the net stabilizer gas from a U.O.P. thermal cracking unit. Composition of the charge stock and the polymer product are given as follows:

	Fresh feed gas, mol %	Polymer gasoline liquid, vol. %
Hydrogen		
Methane	1.8	
Ethylene	1.8	
Ethane	7.6	
Propylene	14.1	
Propane	24.5	
Isobutane	3.5	0.4
Isobutylene	7.2	0.1
n-Butylene	15.2	2.5
Normal butane	22.4	13.9
Pentanes	1.9	9.2
Hexanes plus	....	73.9
	100.0	100.0

Specific gravity of hexanes plus	0.7316
Properties of polymer gasoline:	
End point, °F.	396
R.v.p., lb.	12.3
Specific gravity	0.7082

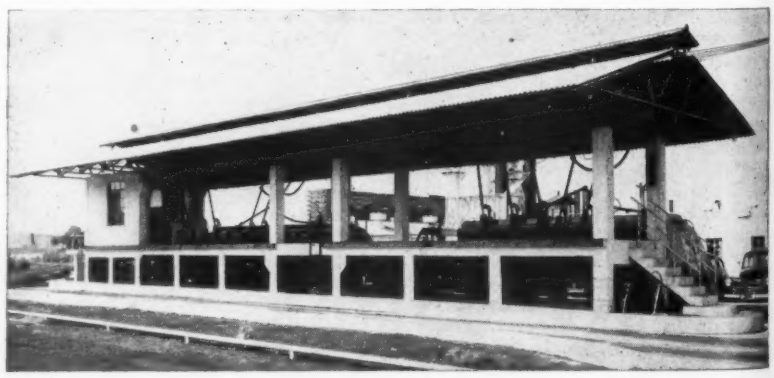
*Refinery superintendent, McMurrey Refining Co.

The poly unit has been in continuous operation since it was placed on stream, producing approximately 150 bbl. of polymer per day. This yield represents about 4 per cent on the topped crude charged to the cracking unit, and an 8 per cent increase in gasoline production. Not only is the production of gasoline increased, but the addition of the high-octane polymer to the motor fuel considerably reduces the amount of tetraethyl lead required to maintain the octane at 80 A.S.T.M. and 88 research for premium gasoline.

The polymer has an 82.5 A.S.T.M. octane rating and 100 A.S.T.M. blending value. Up to August 15, the yield of polymer had been 66 gal. per pound of catalyst and the condition of the catalyst at that time was such as to indicate considerably longer effective life. Olefin conversion rate is about 90 per cent.

A number of catalytic polymerization units have been installed in various refineries since the war to process gases from catalytic cracking units. Many of these have been built by the adaptation of existing equipment. By contrast, this unit, designed to polymerize thermally cracked gases, has been built with all new material from the ground up.

In operation, the gas from the cracking plant stabilizer is caustic washed and water washed. It is then picked up by a compressor and passes through the catalyst tower after exchanging heat with the catalyst tower effluent and being further heated to reaction temperature by means of a



Four-transport-truck loading dock

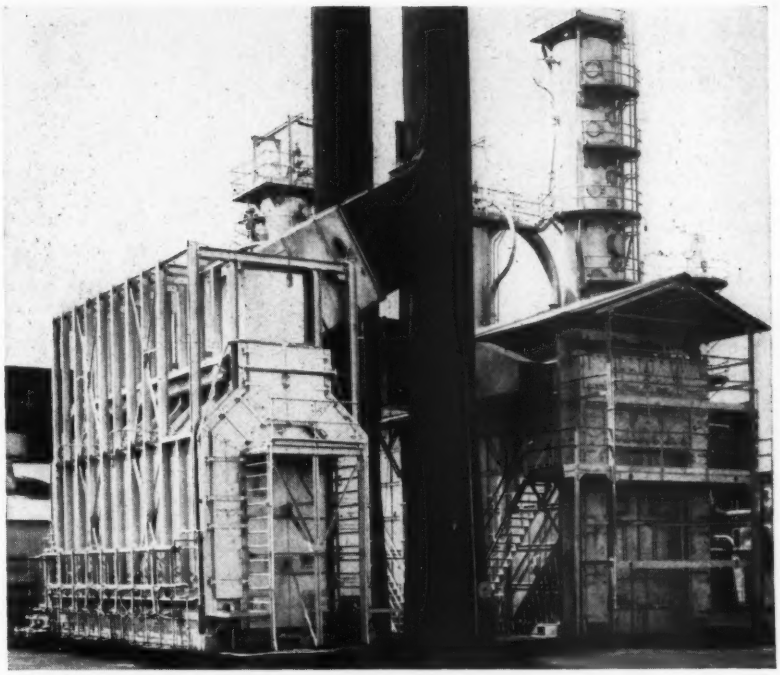
hot oil exchanger. Liquid butane is employed as a quench for catalyst temperature control. The catalyst tower effluent is fractionated to produce a stabilized polymer and a butane fraction which is used in the gasoline blends for vapor pressure control.

Average operating conditions for the poly unit are shown below:

Catalyst temperatures:	
No. 1 bed, avg. °F.	400
No. 2 bed, avg. °F.	405
No. 3 bed, avg. °F.	410
Catalyst tower pressure, psi.	450
Polymer production, bbl. per day average	150
Yield of polymer, vol. per cent on topped crude	4.0
Olefin contents, mol per cent:	
Fresh feed	34
Combined feed	22
Butane and lighter effluent	5
Polymer inspection:	
R.v.p., lb.	12.0
A.P.I. gravity, degrees	68.0
A.S.T.M. distillation:	
I.b.p.	95
10 per cent	160
50 per cent	230
70 per cent	260
90 per cent	360
End point	400
A.S.T.M. gum, mgs./100 ml.	1.2
A.S.T.M. octane number	82.5

Many of the advances in refinery design and operating techniques that have been made since 1931 are exemplified in this refinery. Originally it was a skimming and visbreaking operation only, with a charge capacity of 12,000 bbl. per day of East Texas crude. The products were straightrun gasoline, kerosine, and fuel oil.

Two years later, a thermal cracking unit, with a design capacity of 1,500 bbl. per day of gas oil was built.



Heavy and light-oil heaters on U.O.P. thermal cracking unit

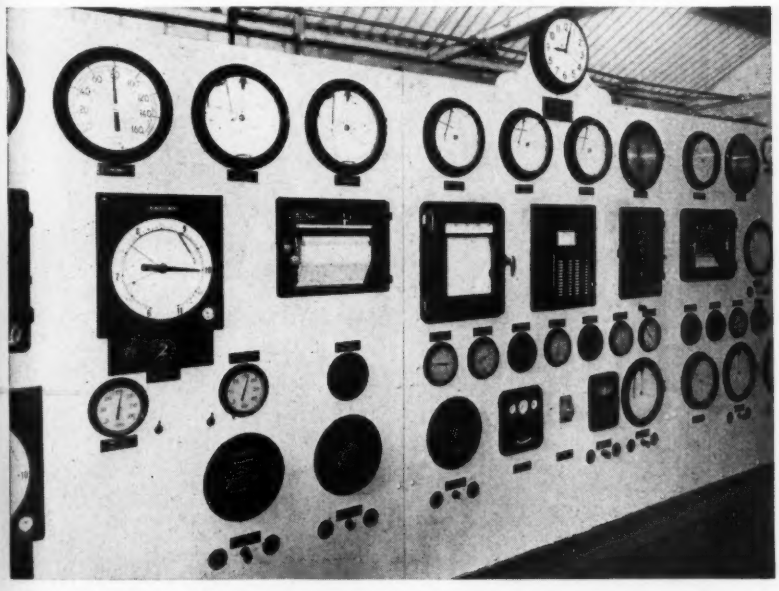
Cracking Unit Installed

In 1937, using all new material, the refinery was completely rebuilt and modernized, with engineering and design by Universal. At that time a U.O.P. two-coil selective cracking unit was installed, which was able to crack 3,750 bbl. per day of a wide variety of charging stocks. This cracking unit has been in successful operation ever since. August 15 was the 142nd day of its present run.

The refinery still operates on East Texas crude, which is gathered and delivered to the plant by the company's own pipe-line system. The products now being made in addition to gasoline are naphtha, kerosine, diesel fuel, and No. 6 fuel oil. These are marketed chiefly by tank car and transport truck. To facilitate the movement of products, the company has installed adjacent to the plant a loading rack to accommodate 60 tank cars. The transport-truck dock can load four trucks at the same time.

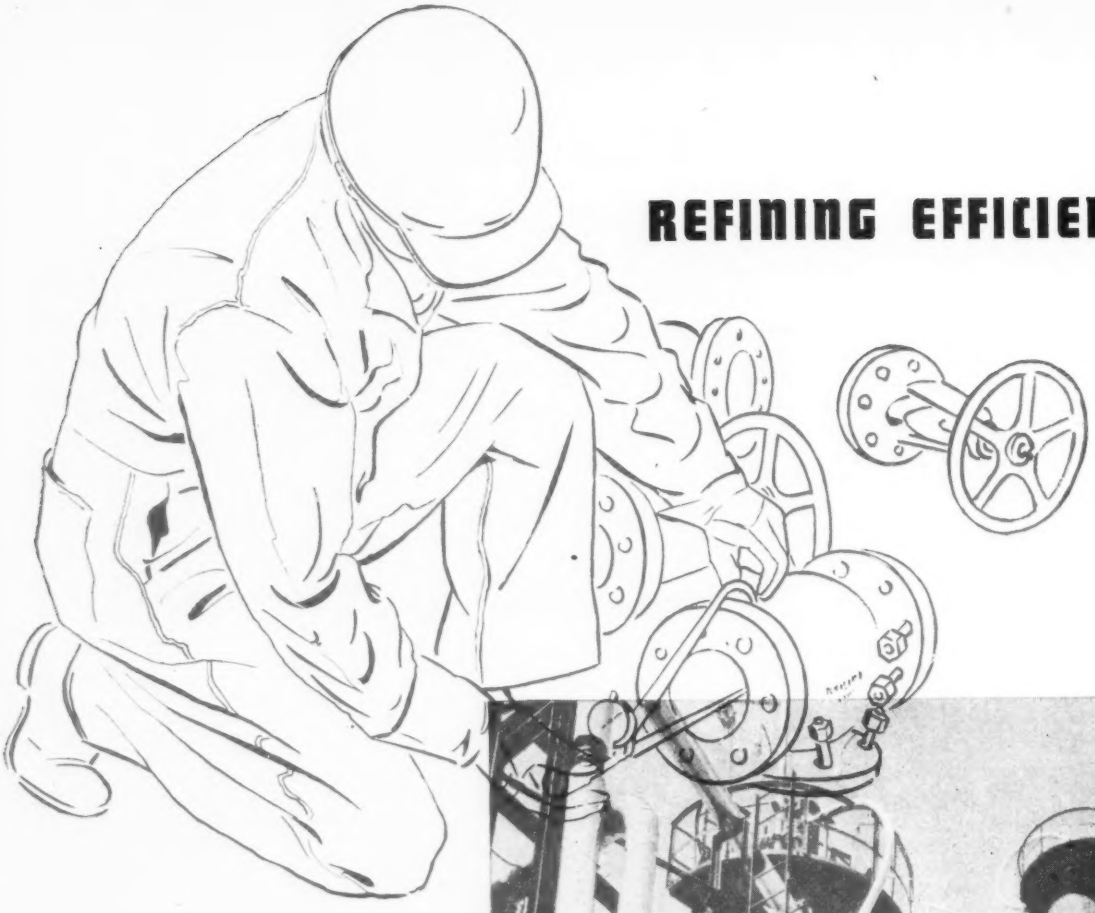
The 17-year history of improvements made at this plant include installing the latest type of instrumentation, automatic controls, laboratory equipment, etc. One tetraethyl lead blending plant for motor gasoline was installed in 1939, and another for aviation gasoline in 1944. The latest of the improvements is the installation of the poly unit, but ahead is the construction of a new crude heater with capacity of 10,000 bbl. per day, and the installation of two new boilers of 250 hp. each, while consideration is being given to the installation of the latest type catalytic cracking unit.

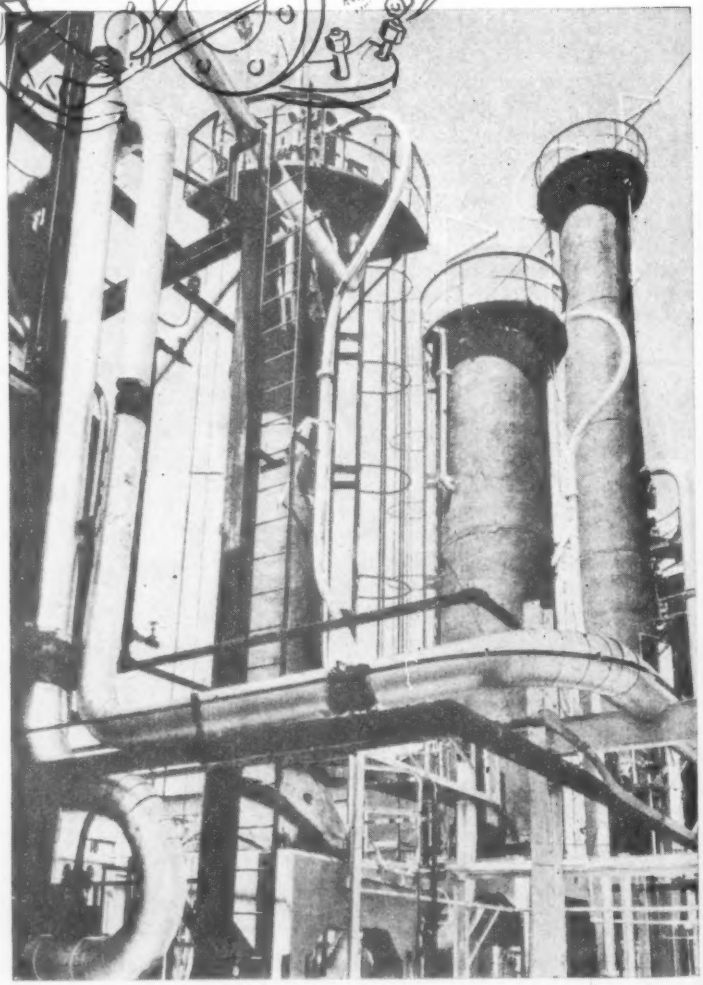
The management of the company is headed by M. H. McMurrey, president. A. D. Blackwell is vice president. A. M. Dulling is vice president and treasurer. The writer is secretary of the company as well as refinery superintendent. F. R. Faris is sales manager, C. M. Bryson, manager of the crude-oil purchasing department, and C. T. Blackwell, pipe-line superintendent.



Instrument control board for thermal cracking unit and crude processing

REFINING EFFICIENCY





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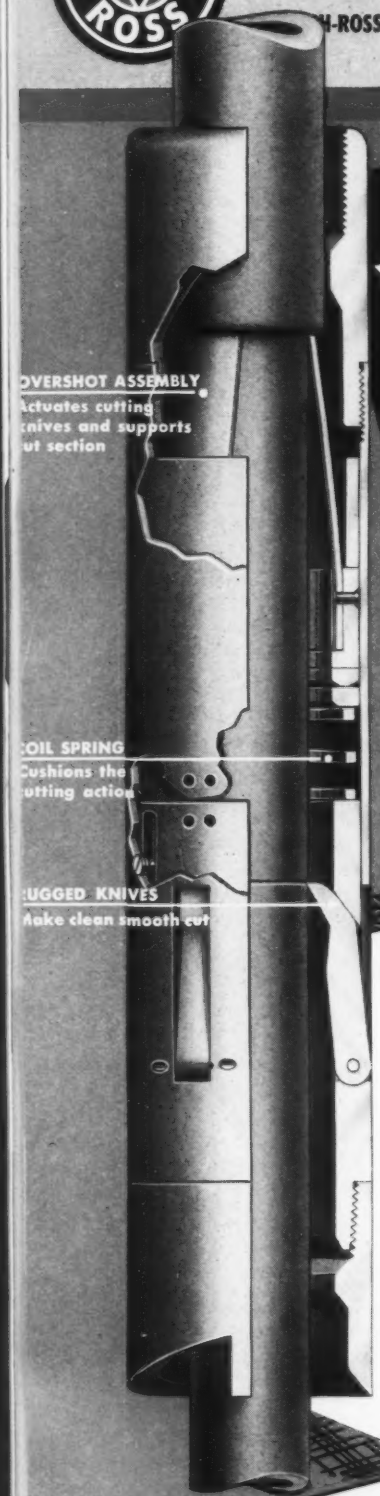

TO CUT REGULAR PIPE

As illustrated at left, for cutting Regular Pipe the tool is made up with Overshot Springs that catch under a tool joint or coupling to both actuate the cutting knives and then retain the cut-off section for recovery after cutting. (Note that the cut section is not supported by knives alone.)

TO CUT UPSET PIPE

As illustrated at right, the same basic tool is used to cut Upset Pipe by simply substituting a special assembly with "Dogs" that catch on the taper of the upset to both actuate the cutting knives and also retain the cut-off section for recovery on the same trip. (Note again that knives alone are not used to support the cut section.)

TO CUT FLUSH PIPE

As illustrated at right, the same basic tool is also used to cut Flush Pipe by simply substituting a special Slip Assembly that grips the pipe at any desired point to both actuate the cutting knives and retain the cut-off section for immediate recovery. (Here, too, knives alone are not depended upon to support the cut section.)

Change from one type of design to another can be made quickly and easily—even in the field—by simply removing the top sub, withdrawing the assembly and spacer in use, and then replacing with the new assembly and spacer desired.

Regardless of the type pipe being cut, the Baash-Ross External Cutter gives the same operating advantages . . . smooth *spring-cushioned* cutting action—cut and recovery with one tool in one run—plus more than 20 years of field-proven dependability!

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Why not centralize your entire cutting and fishing requirements with Baash-Ross? In addition to the External Cutter described above, Baash-Ross can also supply Washover Pipe with Washover Tool Joints and Rotary Shoes for making up the washover and cutting string to use with the Cutter. Also a complete range of other cutting and fishing tools. Write, wire, or phone for full details!

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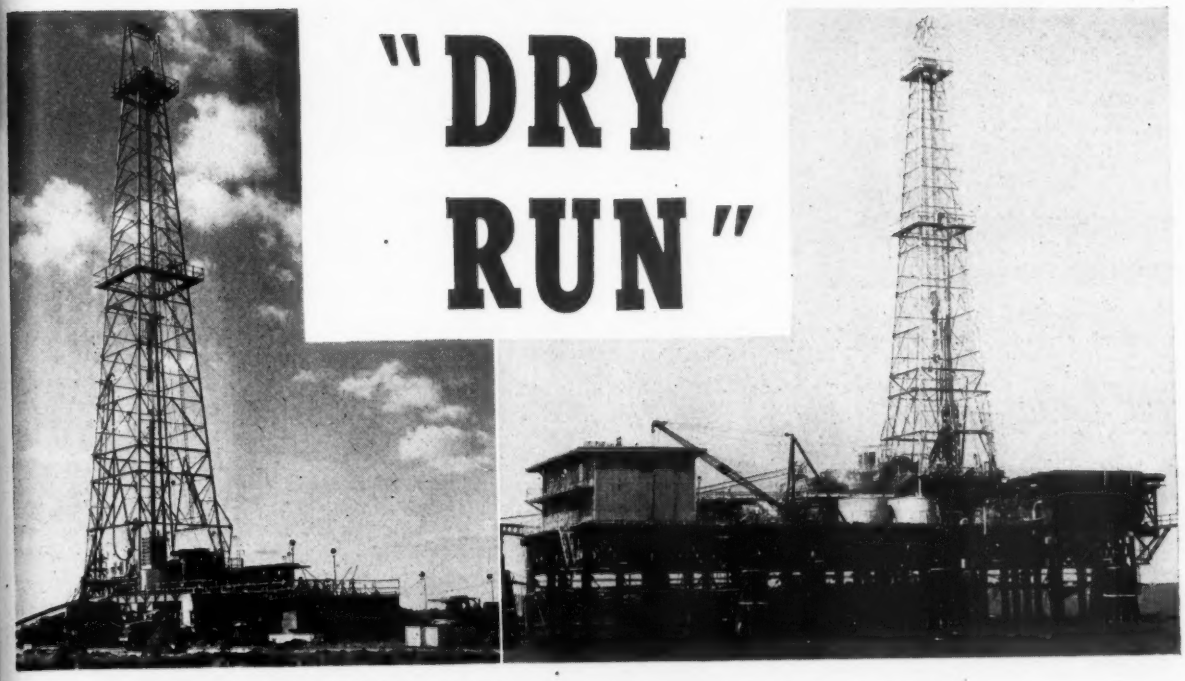
Stanolind Offshore Rig Makes a "DRY RUN"



LAND

The "proving ground" idea or shake-down test procedure was applied by Stanolind to a big new 15,000-ft. rig assemblage and its drilling crews, before starting work out in open Gulf waters. This first job, on land at Spindletop field, deliberately simulated "platform drilling" conditions at sea

SEA

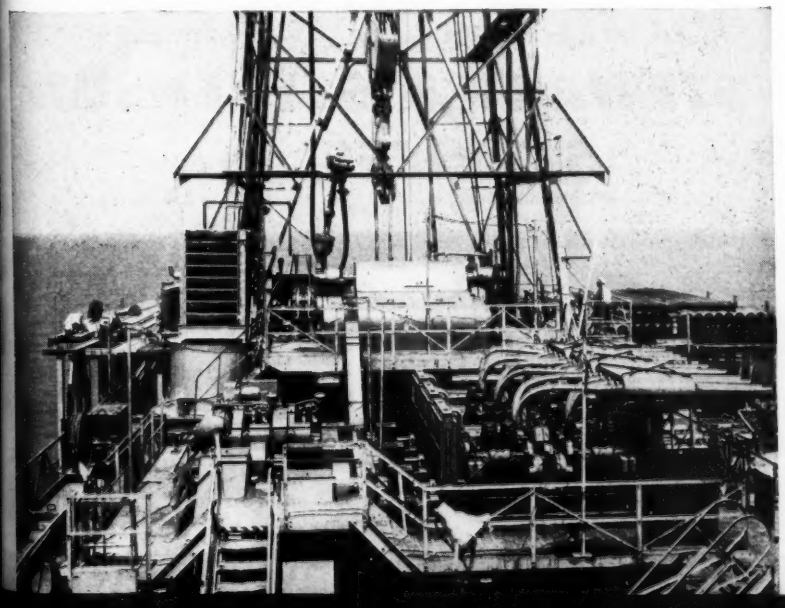
by Leigh S. McCaslin, Jr.

A NEW twist has been added to offshore drilling operations by Stanolind Oil & Gas Co. Before rigging up its new 15,000-ft. diesel rig on an offshore platform in the Gulf of Mexico, Stanolind made a dry-land test of the rig at Spindletop field, Jefferson County, Texas.

In testing the big rig, an actual location was drilled to 3,010 ft. where surface casing was set. The test hole was Stanolind's B-2 Gladys City, a semiwildcat well at Spindletop. This particular location was chosen because of its proximity to Beaumont —the port from which the rig was loaded for movement to the offshore platform.

The objectives of the company in performing this "dry run" were several. In the first place it was a chance to familiarize drilling crews with the operation of the rig. Some of the crew members were unfamiliar with power-rig operation, having previously been on steam rigs. Secondly, the land operation was an opportunity to iron out the little assembly kinks that always turn up the first time a new rig is erected. In the third place, the Spindletop well provided a "shakedown" run for the equipment on the rig, giving Stanolind a check on its operation.

The offshore location for which the rig was bought will be Stanolind's first 100 per cent company-owned operation in the Gulf. (The company has a three-eighths interest in operations currently under way on two 20,000-acre blocks off Terrebonne Parish, Louisiana. Kerr-McGee Oil Industries, Inc., is operator in this venture and Phillips Petroleum Co. has a half interest. Kerr-McGee brought in the first distant offshore



Close-up view of Stanolind's new No. 8 rig, from engine side. This is on location at 1 Louisiana offshore, State Tract 1133

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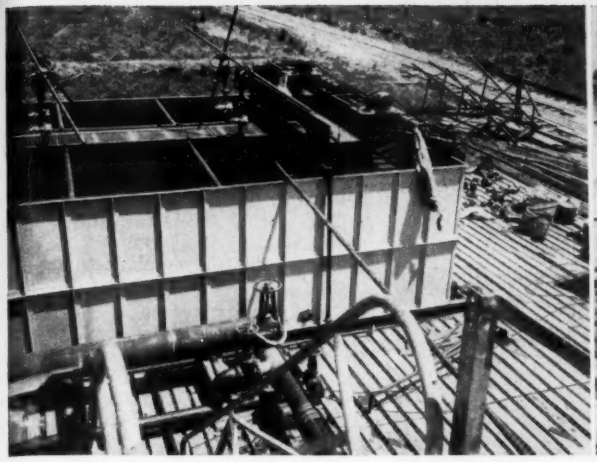
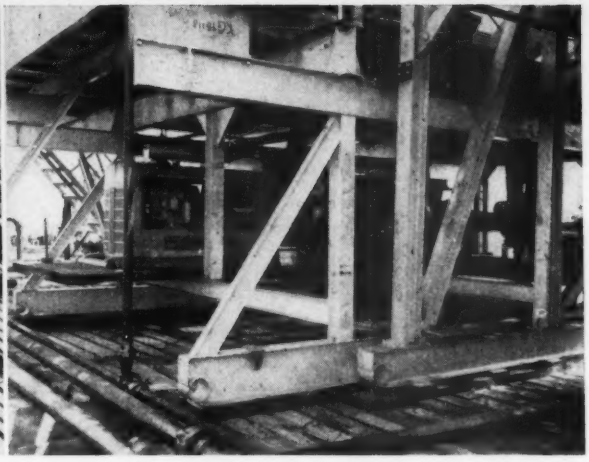




oil pool last November on one of these blocks.) Stanolind's test, which is presently drilling, is the 1 Louisiana Offshore, State Tract 1133, 6½ miles offshore from Cameron Parish, Louisiana, in 35 ft. of water. Stanolind has under lease from the state of Louisiana a 22,500-acre block surrounding the test. The well is 150 miles west of the Kerr-McGee discovery in which Stanolind has an interest.

Sea Situation Simulated

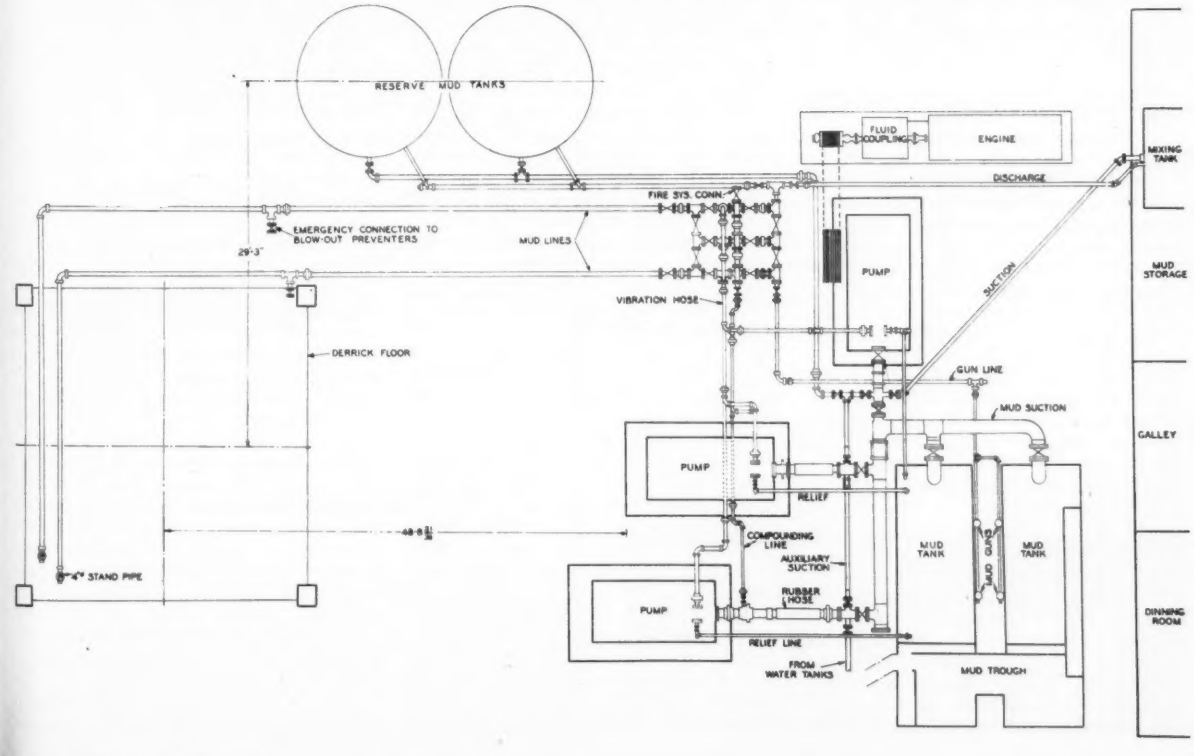
In preparing the land location, a timber mat the same size and shape as the offshore drilling platform was laid. The derrick used was one intended for Gulf operations and with the same specifications as the offshore derrick. It is 140 ft. high with a 30-ft. square base, a load capacity of 952,000 lb., and is designed to withstand a 125-m.p.h. wind with full pipe setback. The derrick has a

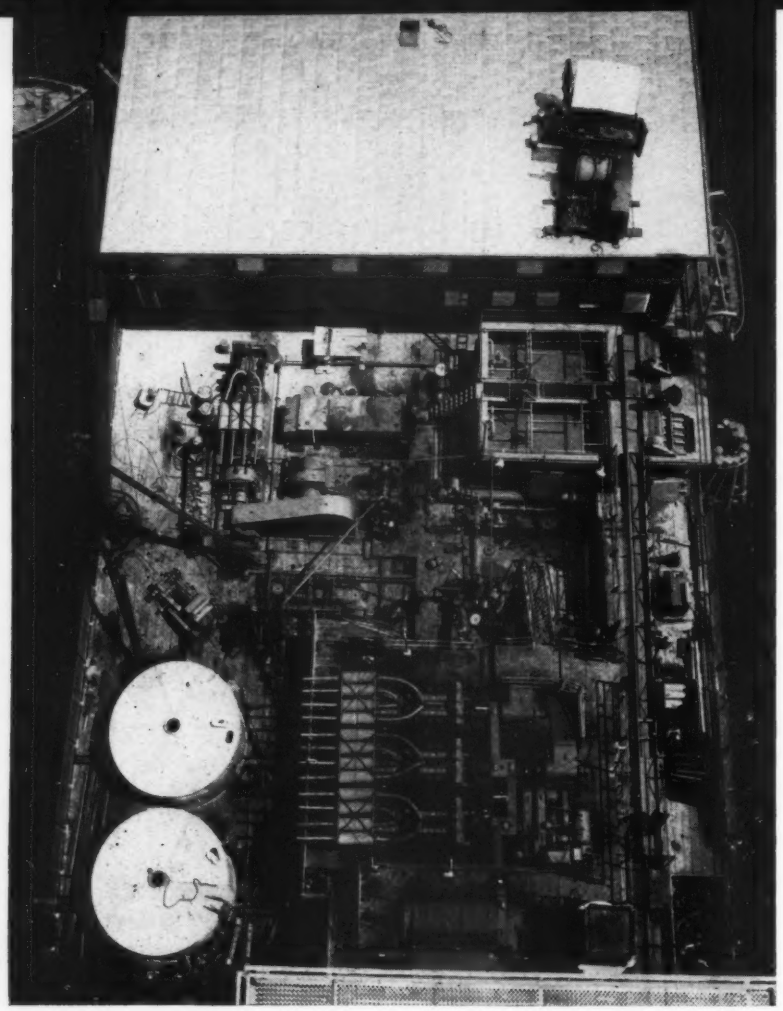
Above, left: The two mud tanks during rigging-up operations on the "dry run." The tanks are 9 ft. high, 8 ft. wide, and 27 ft. long. The purpose of the unusual height is to save on "over-water" substructure space.

Above, right: The substructures for the draw works and engines. These units are entirely independent and designed to be skidded while fully loaded.

Right: The two standpipes are a safety precaution in case of a rotary hose break or necessary maintenance on a hose during operations. One rotary hose is rubber, the other steel

Below: Detail of hookup of mud lines for Stanolind's offshore drilling-rig platform





Bird's-eye view of power plant, mud pumps, mud-circulating tanks (upper right) and reserve-mud storage (lower left). Crew quarters are shown at top

water table opening of 7 ft. 6 in. for possible future use with larger crown sheaves.

The heavy-duty, completely air-controlled power rig is rated at 15,000 ft. with 4½-in. drill pipe and is powered with three 600-hp. diesels.

The three 7¾ by 18-in. slush pumps on the rig are manifolded in such a manner that the discharge from any pump can be used for any service. These services include: circulation, gunning, mixing, delivery to reserves, fire fighting, and compounding. There are two mud lines—allowing a stand-by—all the way from the pumps to the standpipes. Two standpipes are used to protect against a broken rotary hose or the necessity of maintenance on one of the standpipes. There is a shutoff valve both above and below the gage connection on the standpipes. One of the rotary hoses is of standard rubber construction while the other is steel for rugged drilling conditions.

Running off the compound are a 15-kw. thyrite generator and two small compressors. Two separate skid-mounted utility units are also included. The first consists of a 20-kw., 115-volt d.c. generator, a 30-cu.-ft.-per-minute compressor, and a 220-g.p.m., 90-psi. pump. The second unit contains a 25-kw., 115-volt d.c. generator, a 275-g.p.m., 95-psi. pump, and a 200-amp. welding generator.

An interesting feature is the design of the substructures for the draw works and engines. These substructures are skid mounted, entirely independent, and designed to be skidded on the drilling platform while fully loaded. Special beams were incorporated in the drilling platform to support the skids. The platform is designed to drill four wells in a line 15 ft. apart, hence the desire to skid the substructures while fully loaded. When one well is finished the substructures can be skidded 15 ft. to the next location.

In the matter of safety, the rig is painted in accordance with the safety color code. Also, a special abrasive material has been applied to all surfaces where the crew might walk. This material has been more extensively applied than would be the case on land because of the additional moisture in the air at sea. The material resembles emery cloth and is applied by the use of a plastic cement.

A complete assortment of fishing tools has been assembled in a special case so as to be immediately available on the platform. Tools for 4½-in. drill pipe, 5¾-in. tool joints, and 7¾-in. drill collars are included in addition to such items as a hydraulic knuckle joint, safety joint, rope spear, and taper tap.

The coring reel for the rig is separate and powered by a six-cylinder, 150-hp. diesel engine.

Screw-on tool points are being used on the drill pipe so as to permit replacement on the platform. If directional wells are drilled from the platform, it is expected that there will be more than normal replacement of tool joints. This factor further favors the use of screw-on joints.

Incorporated in the rig is a "Drillogger" with a five-pen recorder to maintain a continuous record of rate of penetration, weight indicator readings, mud-pump pressure, drill-stem torque, and r.p.m. of the rotary table. A Schlumberger electric logging unit and a Halliburton double VPAC, diesel-driven cementing outfit are also organic to the setup. These two units were actually rigged up and used during the dry-land test. The cementing unit was used to set 10¾-in. surface pipe and an electric log was run to 3,010 ft.

12-Hour Shifts at Sea

Crew members worked tour on the dry run as is normal for land drilling operations. However, at sea 12-hour daily shifts will be worked with 7 days on followed by 7 days off. All men due vacations took them after the casing was set on the Spindletop well and prior to commencement of operations in the Gulf.

Test Worthwhile

Stanolind officials consider the dry-land test of their offshore rig to have been a worth-while venture. Their three main objectives of training personnel, ironing out the kinks in the rig hookup, and providing an equipment shakedown were accomplished. As to the future, it is expected than any radically different type of offshore drilling equipment will undergo similar testing before going on location. Specifically, Stanolind is now converting an LST for offshore drilling. It is designed for the combination LST-platform type of offshore drilling setup which is becoming increasingly popular. A dry run of some type is contemplated for this equipment when it is completed.

Division manager for Stanolind in the Gulf Coast division is R. E. Nelson, Jr., with offices in Houston. Offshore operations are being carried out under the supervision of Frank Lindeman, Jr., assistant division production superintendent. Other key men in the offshore drilling program include: George McCray, division drilling superintendent; G. A. Isaacks, assistant division drilling superintendent; T. W. Keating, drilling research engineer; E. D. Jordan, tool pusher; and R. L. St. Clair, relief tool pusher.

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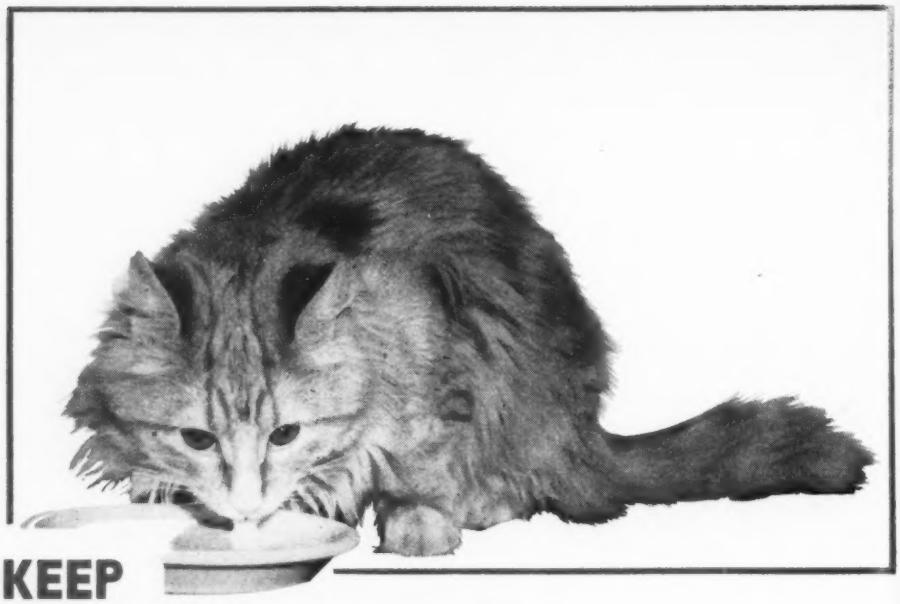

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QUESTIONS on TECHNOLOGY

by W. L. Nelson

Consulting Engineer

Amount of Boiler Blowdown

How much boiler water should be blown down to remove boiler mud?—R. A. B.

According to the American Boiler Manufacturing Association and Affiliated Industries, the general limits in the permissible concentration of solids in boiler water is a function of the boiler pressure, as:

Psig.	Total solids (p.p.m.)
0-300	3,500
301-450	3,000
451-600	2,500
601-750	2,000
751-900	1,500
901-1,000	1,250
1,001-1,500	1,000

This is satisfactory but in order to facilitate the computation of actual quantities, Fig. 1 has been prepared.

Example.—To obtain the percentage of blowdown, enter the chart on the left and proceed horizontally to the amount of solids allowed from the tabulation given above and read at the bottom. Thus, for 140 p.p.m. of solids in the condensate and makeup water and operating at a pressure of 500 psig., the chart would be entered at the left at 140 and horizontally to the 3,000 concentration line. The percentage blowdown read at the bottom is 4.7 per cent.

When operating at 20,000 lb. per hour (over 680 boiler horsepower) the pounds of blowdown per hour is 940. This was found by moving upward from 4.7 at the bottom to the 20,000-lb. line, and then reading 940 at the right.

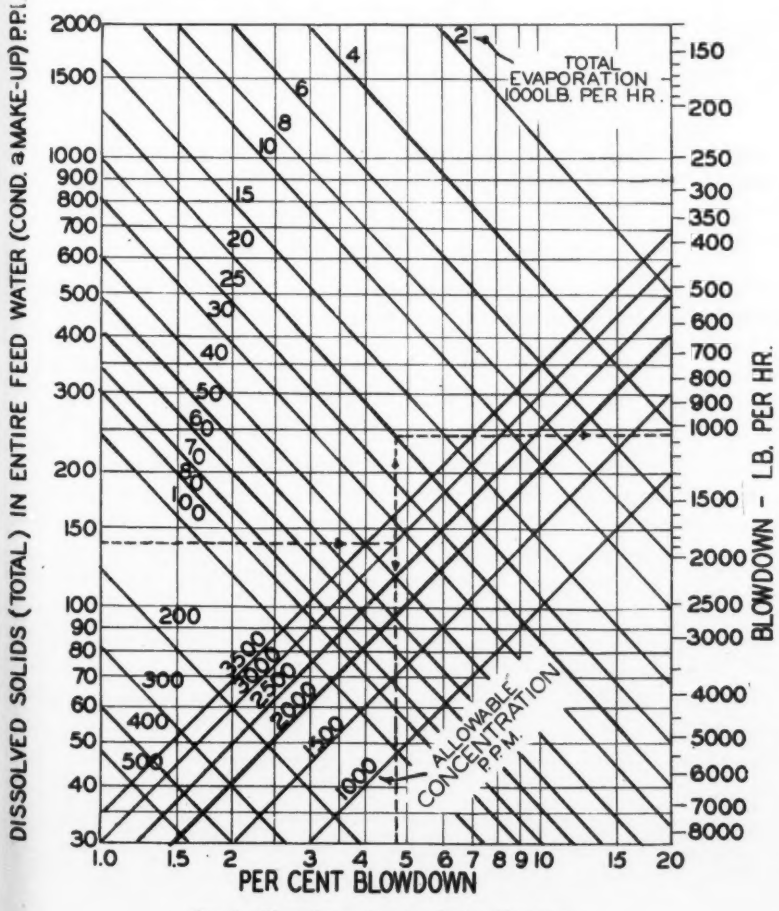

DISSOLVED SOLIDS (TOTAL) IN ENTIRE FEED WATER (COND. & MAKE-UP) P.P.M.
BLOWDOWN - LB. PER HR.
PER CENT BLOWDOWN
TOTAL EVAPORATION 1000 LB. PER HR.
ALLOWABLE CONCENTRATION P.P.M.

Fig. 1—Chart for estimating boiler blowdown

Diesel-Fuel Tanks

Recently one of our customers installed a twin-six-diesel engine and the engineer that installed engine advised our customer not to use diesel fuel that had been stored in galvanized tanks. Our customer has numerous diesels located at various points and uses galvanized tanks, and is anxious to know what harmful effects this might have.—J. H. P.

Galvanized tanks have apparently caused trouble by flaking of the zinc and by the zinc oxide that is formed by the flux during galvanizing.

Flaking off of zinc occurs particularly at the seams. These flakes lodge over the fuel section opening of the tank and block fuel flow.

White zinc oxide may be formed under the influence of water (moisture in fuel and tank) and the flux used in galvanizing. The oxide is satisfactorily filtered out by the secondary fuel oil filter but caused rapid plugging of the filter elements used.

The above explanations are those of H. M. Gadebusch of the Detroit Diesel Engine Division of General Motors Corp. He also states that no difficulty with sulfur in the diesel fuel has been encountered with galvanized tanks.

Plain steel tanks are considered as entirely satisfactory if the fuel is free of water. In marine applications, however, the fuel oil is very often contaminated with water and the water will eventually cause corrosion. Salt water is particularly troublesome. Tern-plate (lead-coated steel) tanks are satisfactory even for marine service and is the preferred material for diesel tank construction.

Copper tanks are generally satisfactory if the fuel does not have a high-sulfur content. The action of sulfur causes a black corrosion deposit of copper sulfide on the surface of the tank and this deposit gradually accumulates and results in filter clogging.

What Is Royalty Oil

What is royalty oil?—J. C. V.

Ordinarily the landowner receives one-eighth of the oil production and this oil is called royalty oil. There are, however, many special arrangements. As an example, the Republic of Venezuela, according to its 1943 Law of Hydrocarbons, requires the payment of an exploitation tax of 16⅔ per cent of the crude oil, natural asphalt, or natural gas produced or used, which may be paid in kind or in cash. There are probably dozens of different arrangements, and the oil which goes to the landowner or Government is called royalty oil.

Grade and Yield Estimation Of Natural Gasoline

by Dwight Seeley *

THERE are 24 grades of natural gasoline which fall within the limits of N.G.A.A. specifications. The grade limits of these specifications are:

Reid vapor pressure—10-34 lb.

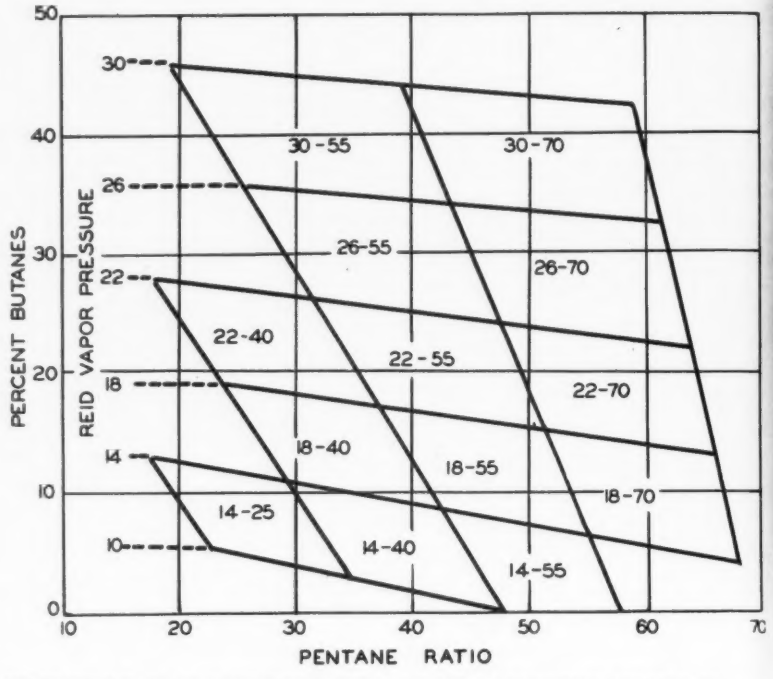
Percentage evaporated at 140°F.—25-85 lb.

In order to obtain the maximum yield of a given grade product, the limiting Reid vapor pressure (maximum per cent butanes) is approached as closely as possible. For example, in the production of a 26-70 grade gasoline, in which the C_5 ratio is 55, the minimum volume of butanes which is required for a vapor pressure of 22 lb. (the minimum vapor pressure for 26-70) is 23 per cent. The maximum volume of butanes (quantity required to increase vapor pressure to 26 lb.) is 33 per cent; therefore," for maximum yield, the butanes content would be 33 per cent.

In evaluating the possible plant products which are obtainable from processing hydrocarbon mixtures from gas or distillate wells, no exact yield-grade relationship can be established. This is true because of the wide variation in the percentages of the various hydrocarbons found in the effluent streams from these wells.

The exact yield and grade of product produced from a gas of given composition requires a hydrocarbon balance throughout the entire plant. Since this procedure is too long and complicated for estimate work, a close approximation can be obtained by making two simplifying basic as-

*Sohio Petroleum Co., Oklahoma City.



PENTANE RATIO—LIQUID VOLUME PERCENT OF PENTANES IN PENTANE AND HEAVIER
PERCENT BUTANES—LIQUID VOLUME PERCENT OF ISO AND NORMAL BUTANES IN GASOLINE MIXTURE
GRADES ARE SHOWN IN BLOCKS.

Fig. 2.—Per cent butanes vs. pentane ratio in natural gasoline

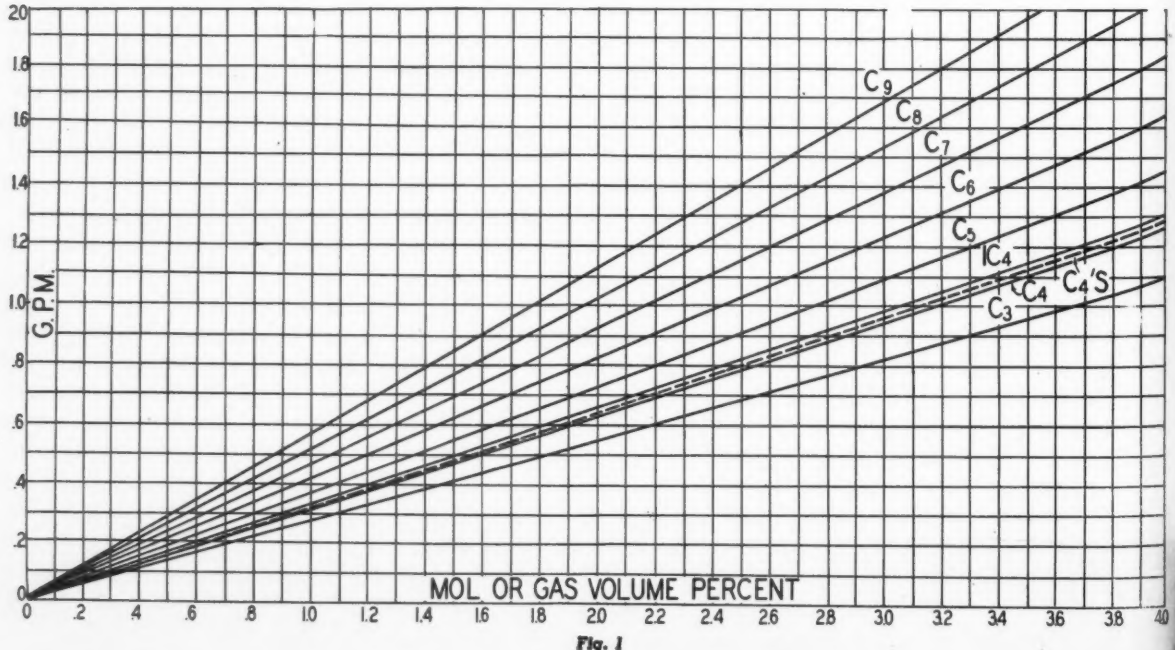


Fig. 1

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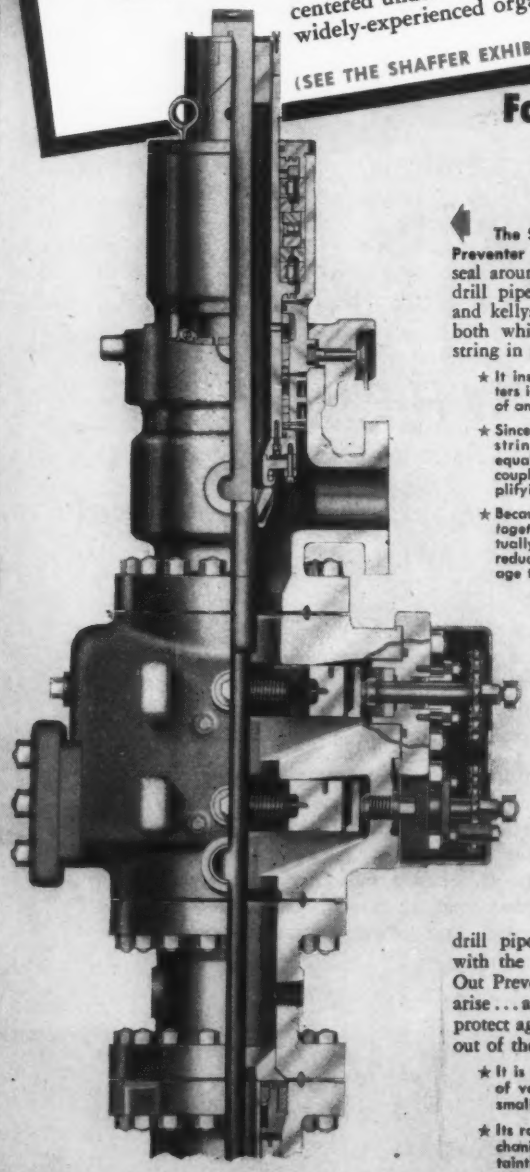
And best of all, by standardizing on Shaffer pressure control equipment you not only gain the advantages of centralized responsibility, *but you also assure yourself of the latest and best in each individual type of unit.* For Shaffer, pioneer of modern pressure control equipment, has steadily perfected one important pressure control advancement after another, until today its equipment is the standard for modern drilling operations and completions. For example, check over some of the many advantages in these typical Shaffer pressure control units . . .

(SEE THE SHAFFER EXHIBIT — BOOTHS 1 and 2, OKLAHOMA BUILDING — AT THE TULSA OIL SHOW!)



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THE SHAFFER COMBINATION ROTATING BLOW-OUT PREVENTER AND STRIPPER

The Shaffer Combination Rotating Blow-Out Preventer and Stripper maintains *continuous* seal around all elements* in the drill string—drill pipe, couplings, tool joints, drill collars and kellys (square, hexagonal or octagonal)—both while drilling and while stripping the string in and out of the well.

★ It instantly adjusts itself to the varying diameters in the drill string without manual operations of any kind.

★ Since it seals around all elements of the drill string—pipe, couplings, and tool joints—with equal efficiency, *any* type of drill pipe (flush, coupled or upset) can be used, thus greatly simplifying equipment needs.

★ Because the kelly and the stripper rubber rotate *together* (not one inside the other), there is virtually no wear on the rubber while drilling, thus reducing maintenance and risk of pressure leakage to an absolute minimum.

★ Its Quick Releasing Bonnet permits almost instant release of the internal mechanism for quickly raising and lowering unusually large diameters such as bits and reamers through the unit, saving time and simplifying operations.

★ An expandable barrier of steel latches prevents damage to the rubber or its extrusion by high pressures.

★ The unique construction of its stripper rubber uses well pressure to assist the sealing action. The higher the pressure the tighter the seal—*automatically.*

★ Its advanced bearing design splits compound loads into the two components of pure radial and pure thrust, carrying each on separate bearing assemblies specifically designed for that type of load. This means longer life and negligible bearing maintenance.

★ Since all bearings are pre-packed with high temperature, high speed, stabilized grease that resists oxidation and heat, life time lubrication is assured without crew maintenance or attention.

★ The unit is not only unusually compact in overall height, but built-in flow and mud cross connections further conserve valuable height in the cellar.

The above are only a few of *many* unique advancements that make the Shaffer Combination Rotating Blow-Out Preventer and Stripper the most efficient and dependable unit available for modern drilling operations. Get the full story before you invest in *any* pressure control equipment!

**Excepting such abnormally large diameters as bits or reamers.*

THE SHAFFER DOUBLE CELLAR CONTROL GATE

The Shaffer Double Cellar Control Gate combines in *one* compact body *two* compartments, complete with ram assemblies—the upper for closing around the drill pipe and the lower for closing off open hole. The rams for closing around drill pipe give complete stand-by protection with the Shaffer Combination Rotating Blow-Out Preventer and Stripper when emergencies arise . . . and the rams for closing off open hole protect against blow-outs when the drill pipe is out of the well.

★ It is unusually compact, requiring less than 29" of vertical space for the largest size (13⅝")—smaller sizes even less!

★ Its rams are opened and closed by *positive* mechanical drive that eliminates operating uncertainties—and also assures rams *remaining* in whatever position they are set. No auxiliary locking devices or secondary closing operations are necessary!

★ Its rams are unusually easy to change for adapting to various pipe sizes. Only one end cover need be removed for changing the complete ram assembly.

★ It can be used with virtually *any* type of power drive—air, hydraulic, steam or electric—each with the added protection of complete manual stand-by!

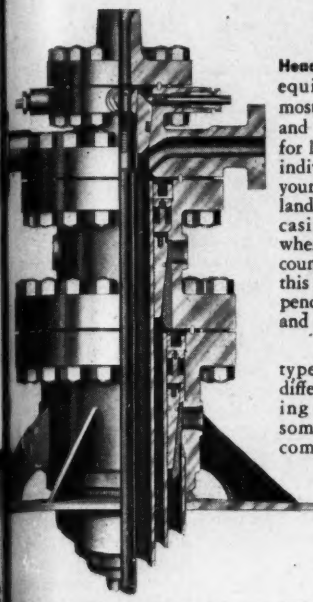
★ The steeply-sloped bottoms of its ram compartments—coupled with the high, narrow ribs upon which the rams travel—prevent mud and sediment accumulations from interfering with quick, sure ram operation.

★ It is unusually simple to install, since no complicated piping or space-wasting pressure manifolding is required for Shaffer Gates.

There are many other advantages built into Shaffer Double Cellar Control Gates. Shaffer Single Cellar Control Gates embody the same operating advantages and are available for applications where single gates are desired. Made in a complete range of sizes from 6⅜" to 21½", there is a size and type of Shaffer Cellar Control Gate to meet your pressure control requirements!

For maximum safety *IN CASING, TUBING and PRODUCTION OPERATIONS . . .*

SHAFFER SPOOL TYPE LANDING HEADS



Shaffer Combination Landing Base Head, with Spool Type Landing Head and Shaffer Type 46 Tubing Head.

Shaffer Spool Type Landing Heads—*pioneer* of this type of equipment—still provide the most advanced, most adaptable and safest equipment available for landing and packing-off each individual string of casing in your wells. They can be used for landing the longest and heaviest casing strings, and on wells where highest pressures are encountered—yours assurance that this equipment is completely dependable for modern drilling and completion requirements.

They are available in many types, and in a choice of *five* different packing units for packing off around the casing . . . some with threaded rings for compressing the packing . . . some with no threads whatever in the internal bore . . . and one with an all-metal packing unit ideal for handling certain types of crudes.

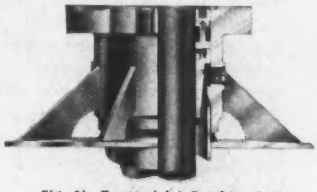
Available in all A.P.I. pressure ratings (Series 400, 600, 900, 1500 and 2500), all Shaffer Heads offer the following vital advantages . . .

- ★ Each individual string is landed with safety at any point desired without any necessity of "letting go," measuring or re-threading.
- ★ Each string is supported on its own flange with an upper flange provided for the support of the next string.
- ★ Each string is suspended on its own set of slips, with no accumulation of weight placed on those slips by subsequent strings of casing and tubing—nor is it affected by any load due to well pressures.
- ★ Each string is packed off securely against high pressure, with provision for gas outlet, mud line or overflow as required, and is packed off independent of any other head in the assembly.
- ★ Each Head is an independent self-contained unit and its packing-off arrangement does not depend upon other heads or flanges to effect a positive seal.

SHAFFER COMBINATION LANDING BASE HEADS

Shown below is a typical Shaffer Combination Landing Base Head—the type of landing head widely used on modern well completions where space is at a premium. These heads—available in 5 different types—provide both a Base and Head in *one* compact unit having a total vertical height equal to *or less than* the height of a conventional head *alone*.

The complete line includes types with standard packing units, with packing units in which no internal threads are used, and a type with all-metal packing unit.



This Shaffer Model A Combination Landing Base Head—one of 5 types available—is typical of the unusual compactness and simplicity of these Base Head units.

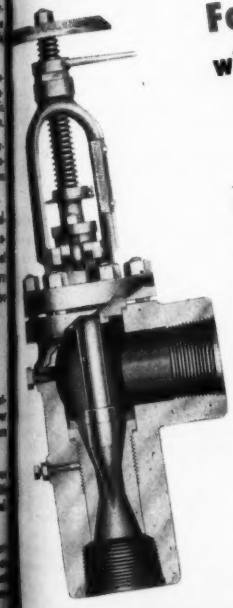
ALL TYPES OF TUBING HEADS

A complete line of Shaffer Tubing Heads is also available to meet every completion requirement—plus multiple zone hook-ups and other special production equipment to meet varied production requirements.

For controlling *FLUID FLOW*

with maximum safety, minimum turbulence—

SHAFFER ADJUSTABLE FLOW BEANS

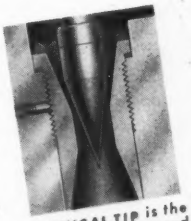


Shaffer is the organization that *pioneered* adjustable flow beans—and Shaffer design embodies *exclusive* features that insure longer life, higher flow efficiency and less maintenance.

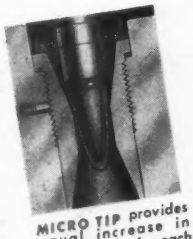
One very important feature is the *double tapered* orifice used in Shaffer Flow Beans. Because the discharge side of the orifice is tapered the same as the entrance side, the fluid flow on the discharge side is expanded *gradually* to the full diameter of the discharge pipe, greatly minimizing turbulence and emulsification.

Because emulsification is reduced, treating costs are lower and greater all around flow efficiency is obtained. Another advantage—Shaffer Flow Beans may be connected so that the flow is either *toward* or *against* the tip, permitting wider versatility for meeting installation requirements.

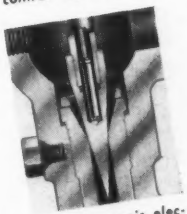
And note at right the various types of tips available with Shaffer Adjustable Flow Beans to meet virtually *any* flow requirement. Widely used for drilling, production and refinery applications, Shaffer Adjustable Flow Beans are available in many types and sizes . . . with flanged or screwed connections . . . bolted or screwed yokes . . . in sizes from 1" to 6" . . . and with pressure ratings to 10,000 lbs. per square inch.



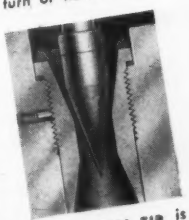
CONICAL TIP is the standard type used for the majority of control applications.



MICRO TIP provides equal increase in opening area for each turn of hand wheel.



THERMO TIP is electrically heated to prevent ice or wax formation in the orifice.



HARD METAL TIP is available in all tip designs to resist abrasive-laden fluids.

SHAFFER

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OKLAHOMA CITY, OKLAHOMA, Acme Oil Tool Company, 1001 S. E. 29th Street
EXPORT SALES OFFICE: Shaffer Tool Works, 500 Fifth Avenue, New York, N. Y., U.S.A.

For the most modern equipment in all types of oil field pressure-control operations, be sure to specify the pioneer—SHAFFER. You will find more details on Shaffer equipment on pages 3843 to 3894 of your 1948 Composite Catalog . . . or send for your free copy of the new Shaffer Catalog!

sumptions. The first of these assumptions is that the hexane-plus portion of the natural gasoline fraction has the physical properties of normal octane. The second assumption is that the butanes (iso and normal) recovered will be one-third iso and two-thirds normal.

The accuracy of estimates made from Fig. 2 will generally be proportional to the deviation from these basic assumptions. It should be pointed out that these deviations may be of a compensative or additive nature. For example, if the percentage of isobutane in the butanes mixture is higher than one-third and the C_6 portion has properties more nearly to those of nonane than normal octane, the deviations are compensative. On the other hand, if the percentage of isobutane is greater than one-third and the C_6 portion has properties more closely to heptane than normal octane, the deviations are additive.

With the basic assumptions made above, it is possible to define the various grades of natural gasoline by the pentane (C_5) ratio and the percentage of butanes in the final gasoline mixture. The C_5 ratio is the liquid volume percentage of iso and normal pentane in the pentanes plus portion of the mixture.

The conversion of mol or volume per cent to liquid content in terms of gallons per 1,000 standard cubic feet of gas (g.p.m.) and the C_5 ratio is easily accomplished with the aid of Fig. 1.

For example, assume a gas of the following composition:

Component—	Mol per cent
Methane (C_1)	78
Ethane (C_2)	10.5
Propane (C_3)	2
Butanes (C_4's)	3
Pentanes (C_5)	3
Hexanes plus (C_6+)	3.5
Total	100.0

This gas is to be processed through an absorption plant where 95 per cent of the butanes and 60 per cent of the propanes are recovered. The g.p.m. of each component is obtained by multiplying the g.p.m. as determined by Fig. 1 by the recovery factor, which in this case is 95 per cent for butanes and 60 per cent for propane. For the components heavier than butane the recovery will be 99 plus per cent or 100 per cent. The tabulated results for the assumed gas:

Component	Mol per cent	G.p.m. (Fig. 1)	× Rec. factor	= G.p.m. recovered
C_3	2	0.55	0.60	0.33
C_4's	3	0.96	0.95	0.912
C_5	3	1.09	1.0	1.09
C_6+	3.5	1.79	1.0	1.79
				4.122

The C_5 ratio is:

$$\frac{1.09}{1.09 + 1.79} \times 100 = 38$$

Examination of Fig. 2 shows that with a C_5 ratio of 38, five grades of natural gasoline may be produced. If a 14-40 grade is desired, the maximum yield will contain 9.5 per cent butanes. The total yield, expressed in g.p.m., will be composed of all the C_5+ (2.88 g.p.m.) and:

$$\frac{2.88}{0.905} - 2.88 \text{ or } 0.30 \text{ g.p.m. of } C_4\text{'s}$$

The total g.p.m. yield is thus 2.88 plus 0.30 or 3.18 g.p.m. of grade 14-40. The remaining (4.122 — 3.18) or 0.942 g.p.m., will be excess butanes and propane. These may be considered as individual products or blended into L.P.G. mixtures.

If grade 26-70 is desired, it is obvious from Fig. 2, the pentane ratio must be increased. In order to accomplish this, some heavy ends from the C_6+ portion must be "cut" by fractionation. From Fig. 2, it is found that the minimum pentane ratio in 26-70 is 44; therefore, the portion of C_6+ which can remain in the natural gasoline is:

$$\frac{1.09}{1.09 + X} = 0.44$$

$X = 1.39$ g.p.m. (C_6+ which can remain in 26-70) and the portion of the C_6+ which must be cut as a high A.P.I. distillate is 1.79 — 1.39 = 0.40 g.p.m.

The percentage of butanes which can be blended with the C_6+ is read from Fig. 2 as 34 per cent. Thus the total yield will be:

$$\frac{1.39}{0.66} = 2.11 \text{ g.p.m.}$$

and the butane which may be added is 0.72 g.p.m. (2.11 — 1.39).

Handling Sulfuric Acid Sludges

(Continued from page 69)

made of aluminum bronze. Wing-guided seats of pressed Monel have been tried with favorable results. In general, spring-retained valves are unsatisfactory in acid sludge because the springs foul, weaken from corrosion, or break from stress corrosion.

Cylinder sleeves are usually made of aluminum bronze; this material appears to be satisfactory for this purpose.

Boiler corrosion.—The burning of acid sludge might well be expected to affect the boiler life, but the manner in which corrosion is manifested is a bit unusual. Apparently, little boiler corrosion is experienced during operation; however, during this period a lightweight flocculent dust settles out, particularly around the lower drums. This sediment is extremely deliquescent and during inspection and repair periods when the equipment is at substantially atmospheric temperature, water is absorbed from the air to form a highly corrosive acidic material which attacks steel at a rapid rate. This is counteracted by washing the boilers down as quickly as possible after coming off the line, and neutralizing the acid formed with soda ash.

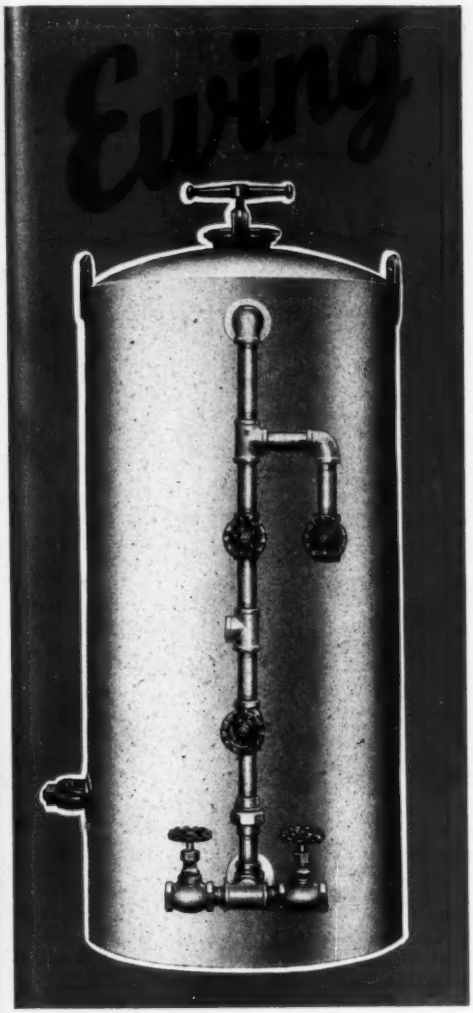
Summary

In this resume of the various specific problems, only some of the items which have been the most troublesome or which have been subject to the closest scrutiny have been discussed. Even for these, for the most part, no answers have been given. Furthermore, if all the multitudinous problems associated with the use of sulfuric acid in refineries were to be considered, only the surface has been scratched. Any number of additional problems can be mentioned offhand—handling of acid in the concentrating plants; vessel and kettle construction; use of bonded-lead versus formed-lead linings; design of brick linings; corrosion of control valves, incorporators, orifices, and other appurtenances; corrosion by high strength acid at high velocities; corrosion resulting from byproducts of acid treating, such as the highly complex sulphonic acids—and still the list is far from complete.

BOOKS

TEXAS GULF COAST OIL 1948. Published by The Rinehart Oil News Co., Dallas, $35.

This book is a comprehensive collection of statistical data relating to oil and gas fields in 29 counties of the Upper Texas Gulf Coast. The area coincides with Railroad Commission District 3. Most of this reference work is devoted to the 309-page compilation of individual field data alphabetically by counties. In addition, there is a tabulation of industrial plant in the area, a summary of the industry's current position, a brief history of Texas Gulf Coast oil development, and a bibliography. The compilation of individual field data includes the following: location, discovery data, average elevation, depths and names of productive horizons, acreage now productive, structure, exploration history, deepest test, nature of product, number of wells producing, proration methods, spacing, gas-oil ratio, daily allowable, outlets, paleontological markers, leading operators, and references. Use of the book is facilitated by a regional field map, county map on each county, and 30 field development maps. The material was prepared by Frank J. Gardner, Rinehart geologist. In an introduction, he explains that the objective of the work is "ready accessibility of information—a condensation under one cover of voluminous amounts of data from many and varied sources. Considerable published material on the Texas Gulf Coast is available to any student of the area, but a long search through many sources is necessary to obtain a brief but complete summary on a particular field."



WATER SOFTENER

Prevents hard water damage to engines and equipment!

What would it cost you to tear down your engine and replace a block? How many days would you lose? What is a day's lost production worth?

Practically all untreated water is "hard"—containing calcium, magnesium, sand, mud and other impurities

In contact with heated metal in engine cooling systems, hard water deposits flint-like scale, sludge or slime

Every day, jobs are shut down to replace engine blocks, radiator cores and connections cracked or clogged by these accumulated deposits

Don't blame your engine • Soften your water!

The EWING Water Softener is scientifically designed to remove all harmful chemical or solid matter, and to deliver plenty of clean, soft water for any industrial use. It is low in first cost, simple, dependable and economical in operation.

Positive softening action with Zeolite!

The raw water is forced through a deep filtering bed of specially processed Zeolite, sand, and graduated sizes of gravel. The Zeolite removes all scale and sludge-forming impurities by chemical action, and all solids are removed by the combined effect of the filter bed. When the chemical capacity of the Zeolite is exhausted by treating the volume of water indicated in the table at the left, its activity is fully restored by charging with common salt as shown in the table. The Zeolite retains its effectiveness indefinitely.

CAPACITIES and PRICES

Size	Grain Exchange	Lbs. Salt to Regenerate	Price
4 cu. ft.	72,000	32	$350.00
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GALLONS OF SOFT WATER BETWEEN REGENERATIONS

Hardness in Grains per Gal.	4 cu. ft.	6 cu. ft.
10	7,200	10,800
15	4,800	7,200
20	3,600	5,400
25	2,880	4,320
30	2,400	3,600
35	2,060	3,085
40	1,800	2,700
45	1,600	2,400
50	1,404	2,160

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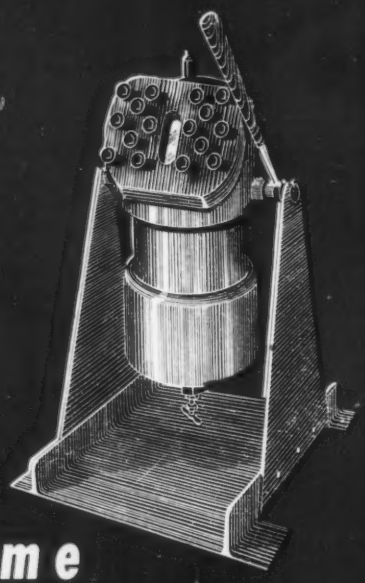

Each new reservoir is born with its own unique "productive personality". Pressure-Volume-Temperature relationships of the oil and dissolved gas, if measured in the *very early life* of the field, will reveal the best producing technique for obtaining maximum ultimate recovery.

Core Lab's service of Reservoir Fluid Analysis is designed for the purpose of obtaining bottom hole samples from key discovery wells and for making comprehensive laboratory tests to obtain the following vital reservoir operating data:

Pressure-Volume Relations: to determine the volume occupied, at any pressure, by one barrel of oil and its dissolved gas at saturation pressure. These data determine the amount of expansion to be expected of the reservoir fluid as pressure declines.

Differential Liberation: to determine the amount of gas liberated at each stage in the pressure decline and the volume of the residual liquid.

Flash Liberation: to determine the optimum separator pressure which, in turn, influences the gravity and volume of stock tank oil.

Viscosity: to measure the "flowability" of the reservoir oil at any bottom hole pressure.

Core Lab's Reservoir Fluid Analysis is a timely step — *if taken in time* — to select the best field operating procedures, to estimate the quantity of oil present in the reservoir and the amount you may reasonably expect to recover.

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PETROLEUM RESERVOIR ENGINEERING

Wild Well in Leduc Field Finally Killed Through Directional Relief

by Gordon B. Nicholson*

AFTER spewing oil and gas uncontrolled for months in prolific Leduc oil field of Alberta, 3 Atlantic, the wildest well in Canada's oil history, finally caught fire—but only 59 hours later it was subdued. The "kill" was made by loading the producing D-3 zone of the Devonian with water pumped into a directional relief hole.†

Two relief wells had been started and drilled simultaneously to insure tapping the formation in event that either operation was delayed by rig or mechanical difficulties.

The 3 Atlantic, drilled by Atlantic Oil, Ltd., of Calgary, made intermittent attempts to blow out, starting in March of this year. Early in May, having loaded upper sands with high-pressure gas, 3 Atlantic broke loose and started flowing oil and gas not only from the casing head but also from scores of surface outcrops, crevices, and geophysical shot holes scattered about the vicinity. Production varied from 7,000 to 14,000 bbl. of pipe-line oil daily throughout the life of the well, with 30 to 50 million cubic feet of natural gas.

Numerous control measures were attempted in an effort to kill the wild well before irreparable damage was done to the Leduc reservoir, but to no avail. Nitroglycerin exploded in the hole had no effect, nor was flow retarded by countless sacks of cement, mud, wood fiber, feathers, nor sawdust. Wild-well experts were flown into Canada and Texas, and a number of methods used to kill wild wells successfully in various parts of the world were tried without effect.

At the outset, decision was made to drill two directional wells as a certain measure to control the flow from the wild well by flooding the formation at close range and loading the bore of the well with heavy fluids in event of failure to kill it by other means. Surface locations were selected after considering subsurface drilling conditions and the prevailing wind direction, with Atlantic West Relief located 758 ft. almost due west of the blowout, Atlantic South Relief approximately 707 ft. toward the south. Two leading companies specializing in directional drilling were summoned to direct operations at the relief wells, to guide the projected bores toward the bottom of the wild well designed to intercept the D-3 at a depth of about 5,250 ft.

The story of the fight against the wild—and finally burning—Leduc well is one of sweat, toil, and a continuing struggle against time. Several oil, service, and supply companies rendered splendid aid. Houston Oil Field Material Co., Inc.; Eastman Oil Well Survey Co.; Halliburton Oil Well Cementing Co.; Dowell Incorporated, and other concerns played important roles with specialized services and equipment.

required average angle of about 20°, at one depth increasing to nearly 24°. Direction and angle, drilling from the south, were held steady throughout, and casing depth was reached with the setting of seven deflecting tools. While running 7-in. casing into the

Atlantic South Relief was the first relief well rigged and spudded, and headed toward its objective with the

After blowing wild for several months, 3 Atlantic burst into flames on September 6, shortly after the derrick had collapsed. The entire rig was destroyed with the exception of the boiler shown in the photograph. The directional well described here, coming in from the west, tapped the D-3 formation on the same day, and some hours after injection into it the fire was extinguished and the wild well killed

*Houston Oil Field Material Co., Inc.

†Drilled by Houston Oil Field Material Co., Inc., Houston.

HOW Murray Rubber HELPS SPARTAN DELIVER DEPENDABLE SUBSURFACE DATA

Today, more than ever before, the productivity of the formations must be reliably established before setting casing.

The Spartan Tool and Service Company of Houston, Texas, has perfected an improved type of open hole formation tester which, according to the manufacturer, assures the operator of a thorough and dependable test.

The resilient packer elements for the Spartan Open-Hole Formation Tester are produced from a special rubber compound by the Murray Rubber Company. The steel inserts required for the packer assembly are also produced by Murray.

Whether it's a rubber seal to pack-off effectively against high fluid or gas pressures, or one to meet a combination of conditions involving high temperature, abrasive wear and deteriorating fluids, Murray engineers have had the diversified experience so necessary for producing the right rubber for the job.

Above—A Spartan Tester about to go into operation. Below—Various sizes of finished packer elements assembled at the Murray plant for delivery to Spartan.

MURRAY RUBBER COMPANY
HOUSTON, TEXAS

9-in. hole, however, the pipe attempted to stick, later being freed and removed from the hole. While reaming the hole with a rock-bit pilot reamer preparatory to making a second attempt to land the casing, the bit inadvertently sidetracked the directional hole at 3,700 ft. The original hole was never relocated despite setting numerous whipstocks; and other misfortunes including stuck drill pipe, loss of tools in the hole, and a long fishing job delayed drilling the well from the point of the sidetracking.

The first whipstock was set in West Relief on Sunday, June 6. In the following weeks, additional deflecting tools were run into the well to increase the angle to an average of 16° needed to reach the objective at the required depth of approximately 5,250 ft.

Tendency of the hole to cave necessitated extreme care on the part of directional operators and other drilling personnel, especially prior to setting deflecting tools. Before each tool was run into the hole, several hours were normally devoted to increasing the viscosity of the drilling mud and conditioning the hole. West Relief had a tendency to lose drift angle, requiring almost constant attention in order to maintain the angle needed, and on occasions additional deflecting tools were set for the sole purpose of reestablishing the angle. Seventeen deflecting tools were set in West Relief while drilling to the required depth, reaching a position only 8 ft. from the calculated bottom of 3 Atlantic. A discrepancy in the original survey developed, resulting in plugging back West Relief to 4,700 ft. for redrilling the bottom portion of the hole, which was accomplished without setting additional tools.

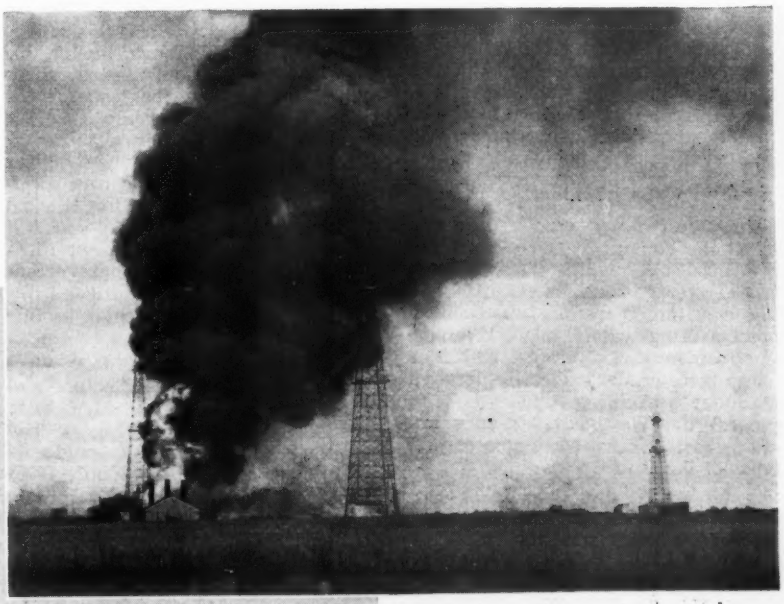
On August 22, 5,225 ft. of 7-in. casing was run into West Relief and cemented. Four days later, drilling recommenced, and the hole was deepened to a measured depth of 5,340 ft., which represents a true vertical depth of 5,237.51 ft., the loss in depth being 102.49 ft. Bottom of the hole in this position was less than 5 ft. from the assumed location of the bottom of 3 Atlantic which had not been surveyed, and was in the green shale which overlies the D-3, approximately 30 ft. above the top of the producing formation.

First attempts to establish circulation between West Relief and 3 Atlantic were made at this depth, trying to break down the shale with acid and water pressure. After several days, this effort was abandoned as the shale refused to absorb water in sufficient quantities to accomplish the results desired, and plans were formulated to drill the well into the D-3.

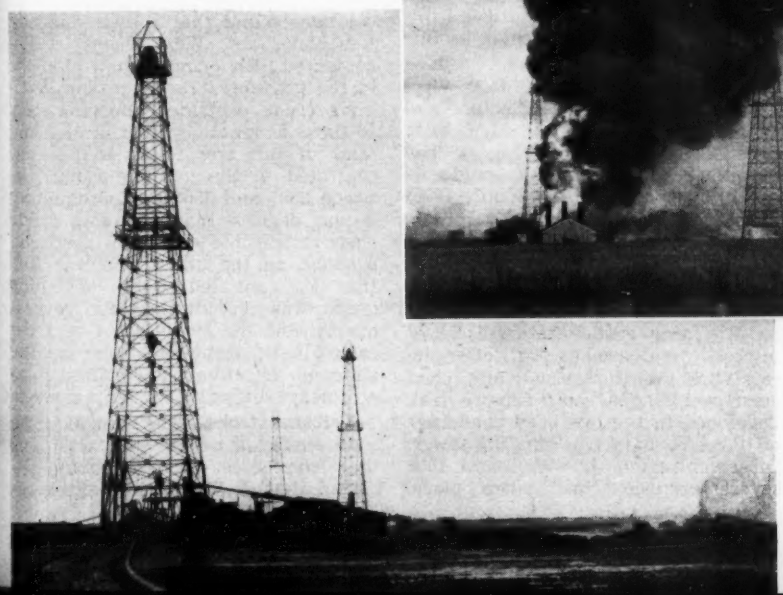
The decision to drill deeper was effected at a propitious moment, for the status of 3 Atlantic underwent striking changes just after drilling started. The derrick, which had perched precariously on the edge of the crater for several months, began to lean as the spongy soil underneath failed to give firm support. Crews attempted to straighten the derrick, and temporarily succeeded; but on the morning of September 6, Labor Day, the derrick crumpled, falling over the well head and the new crater which had appeared directly underneath the derrick. Fire, which had been an ever-present menace, then seemed inevitable, and immediately precautions were taken to prevent its spread if a conflagration started.

Within a few hours, the fear which existed for months became a reality. Probably due to sparks made by a rock hurled from 3 Atlantic and striking the prostrate derrick, the well burst into flames which soon enveloped almost all of the 40-acre tract on which the well is located.

On the same day, West Relief reached its subsurface objective—the D-3 horizon—at a time filled with suspense and drama for the oil operators in Leduc field. An estimated $50,000 worth of oil and gas daily was being consumed by flame. On this day, the bit from West Relief entered the D-3, and almost immediately, water and acid were being pumped through the relief well into the top of the formation. At first, only 550 bbl. hourly could be forced through the small water lines, but steps were taken to lay two 4-in. lines into the well. Completion of these lines permitted injecting 1,350 bbl. of water each hour. With maximum injection starting at noon on September 8, within a few hours circulation was established, with water returns appearing at the surface of the crater. Shortly afterwards, at 4:30 o'clock on the morning of September 9, the fire was extinguished, and less than 2 hours later, 3 Atlantic was dead.



Right: Relative positions of the wild well and the two relief wells are shown in this picture. Looking east, on the extreme right, is South Relief, while West Relief appears just to the left of the flames. Derrick in foreground is 48 Imperial which for a time was used as a water-injection well



Left: With the bottom of West Relief drilling toward its objective, 3 Atlantic was producing up to 14,000 bbl. of oil daily, with the largest volume flowing from the crater seen at right. Rig on the left is located on 3 Atlantic, while in background is West Relief

PROCESSING SOUR CRUDE

At Globe Oil & Refining Co.'s Lemont, Ill., Refinery

by R. B. Pierce, W. F. Krausel,† and J. M. Lawson‡*

SOUR crude has been processed at the Globe Oil & Refining Co., Lemont, Ill., refinery for the past several years. The over-all refinery operation has averaged 25-50 per cent sour crude from West Texas and Wyoming fields and the remainder of sweet stocks from Kansas, Gulf Coast, and Illinois fields. The West Texas crude from Slaughter field is brought in by pipe line while the Wyoming crudes from Elk Basin, Byron Basin, and Oregon Basin are brought in by tank car as well as pipe line.

The sour crude is kept segregated from the sweet in the refinery storage tanks but the West Texas and Wyoming crudes are mingled in the sour tanks. The sour-crude tanks are floating roof while the sweet crude tanks are fixed roof.

Crude processing is done on a 9,000-bbl.-per-day topping unit and a 22,-000-bbl.-per-day combination unit. The topping unit is operated on 100 per cent sour crude all of the time except for a 24-hour period before a scheduled shutdown for inspection. It has been found by experience that dangers from hydrogen sulfide are much less when the unit is shut down with sweet crude in the system.

The combination unit is operated intermittently on sweet and sour crude and the only sour stock processed on this unit is the amount in excess of the capacity of the 9,000-bbl.-per-day topping unit. It has been found advantageous to keep the sour material segregated and process it as 100 per cent sour crude rather than to mix the sweet and sour crudes and process them together.

Salt Content

The West Texas crudes processed by Globe contain 150-300 lb. of salt per 1,000 bbl., while the Wyoming crudes average 35-60 lb. per 1,000 bbl. The desalting operation is a chemical process using water, soda ash, and a small amount of Tretolite, and it is found these crudes are easily desalted to about 5-15 lb. per 1,000 bbl. In general the West Texas crudes are more easily desalted than certain types of the Gulf Coastal oils.

Topping Operations

Gasoline stocks. — The straightrun gasoline from topping operations contains approximately 0.3 per cent total sulfur and 0.1 per cent mercaptan sulfur. All of the straightrun gasoline from sour crude is catalytically desulfurized through a Perco bauxite desulfurization unit. Total sulfur content is reduced to approximately 0.03-0.05 per cent and there is an octane increase of approximately 2-3 octanes, clear and 9-13 octanes, with 3 cc. TEL. This gasoline can usually be put direct to the blending tanks after caustic wash without further treatment.

The catalytic desulfurization unit is extremely valuable for processing this sour gasoline because it does three things: (1) it takes the load off the treating plant because only a caustic wash is required after desulfurization; (2) it reduces the total sulfur content well below 0.1 per cent specification so the higher-sulfur cracked gasoline can be blended in and still make 0.1 per cent sulfur specification; (3) the octane improvement makes it possible to utilize this straightrun gasoline in Ethyl gasoline to good advantage.

The straightrun gasoline from West Texas crudes is very good octane and will make 78-81 A.S.T.M.-M.M. with 3 cc. TEL after desulfurization. The gasoline from Wyoming crude is much lower and will make only 70-73 with 3 cc. TEL after desulfurization. Fortunately most of our sour crude has been West Texas stock.

We had one experience with our desulfurization unit while operating on Wyoming crude that will be of interest. In December 1944, after the catalytic desulfurization unit had been operating a short time, a leak developed in the overhead condenser off the secondary fractionating tower. On examination, it was found that severe corrosion had taken place. Analysis of the corrosion products and the water condensate showed that the corrosion was caused by hydrochloric acid. This was a definite surprise because no past experience or other information indicated any possibility of this type of corrosion. Ammonia was injected as a means of immediately neutralizing the acid and an investigation was started to determine the cause and source of the material.

It was decided that the acid must come from the feed to the unit or be present in the catalyst itself. The catalyst was examined and found to contain no hydrochloric acid or chloride of any kind. Preliminary examination of the gasoline feed to the unit showed no trace of entrained water or acid. Combustion analysis of the gasoline feed stock showed the presence of chlorinated hydrocarbons and this gave the clue to the cause of the hydrochloric acid corrosion. These chloroparaffins cracked when passed through the bauxite catalyst at operating temperature, with the formation of hydrochloric acid and probably an olefinic hydrocarbon. This acid then attacked the metal of the condenser off the secondary fractionator at the point of condensation.

Since we were processing several types of crude it was felt that we should find out which crude was responsible for this condition. Five grades of crude, West Texas (Slaughter), Wyoming, Illinois, Kansas, and Louisiana were studied in the laboratory investigation. Each crude was carefully fractionated and 2 per cent fractions taken off to a top vapor temperature of 400° F. These samples of gasoline were then analyzed for organic chloride after a caustic wash to remove any entrained hydrochloric acid.

It was found that Illinois, Kansas, Louisiana, and West Texas crudes contained little or no organic chloride in the gasolines. However, the Wyoming crude contained approximately 10 times as much as other crudes and most of this was found to be concentrated in the gasoline range between 250° and 350° F. Consequently it was decided that Wyoming crude was responsible for the corrosion problem on the unit. This was further substantiated when Wyoming crude was discontinued for several months and the evolution of acid became almost negligible. However, the ammonia effectively neutralized it so no further difficulty was experienced.

Kerosine stocks.—The kerosine from sour crudes is not as satisfactory as that from sweet crude without special treatment. We do not make kero-

*Superintendent, †chief chemist, ‡chief engineer, Globe Oil & Refining Co., Lemont, Ill. Paper presented at Western Petroleum Refiners Association regional technical meeting, Lansing, Mich., August 27.

sine for sale as such when operating on sour crude. The kerosine from West Texas crude is characterized by poor color stability, poor burning quality because of sulfur and aromatics. The kerosine from Wyoming crude has satisfactory color stability and fair burning quality but high sulfur. One of the advantages of intermittent operation is that kerosine can be made while operating on sweet crude on the combination unit. The kerosine fraction from sour crude is used in the range-oil production.

Range-oil stocks.—We have experienced no difficulty with No. 1 range oil as a result of processing about 35 per cent of sour crude. There have been few complaints and operation has been satisfactory for both space heaters and furnaces. The heavy fraction of the range-oil distillate is used for diesel fuel for both trucks and marine engines. Operation has been satisfactory and properties appear to be satisfactory for these engines.

Flux oil.—The vacuum-reduced residuum is used for flux oil for the roofing industry. In general, this high-sulfur flux oil is not as satisfactory as that from sweet crude, because, on oxidation the high-sulfur flux blows down very hard and brittle. The high-sulfur flux oxidizes to a penetration of 9-10 at a 220° F. softening point while a low-sulfur flux has a penetration of 25-30 at the same softening point. However, it has been found that certain additives will inhibit the oxidation so that high sulfur flux can be blown down to approximately the same specifications as the low sulfur material. This is being practiced commercially and the high sulfur asphalt is being used satisfactorily.

Cracking Operations

The cracked gasoline from sour crude operation has approximately 0.5-0.6 per cent total sulfur and 0.12-0.15 per cent mercaptan sulfur. This makes the sweetening process somewhat of a problem unless carefully handled. An efficient regenerable caustic scrubber for extraction of mercaptans removes about 60 per cent and makes it possible to sweeten the cracked gasoline on the Linde copper-treating unit. Additional heating facilities were added to take care of the moisture created by sweetening the sour stock so the clay slurry would not become excessively wet. This has made it possible to sweeten the gasoline satisfactorily without dissolved copper difficulties even when the entire plant operates on sour crude.

Residual Fuel Oil

The residual-fuel-oil market is somewhat restricted by sour-crude operation. However, the intermittent operation is again advantageous because the low-sulfur and high-sulfur fuels can be segregated. The low-sulfur residual fuels are used for the industries requiring low-sulfur content (max. 1 per cent sulfur) such as malt driers, open-hearth steel furnaces, etc.

The high-sulfur fuels are entirely satisfactory for heating purposes, steam generation, and operations where the oil is used for heat only. The cracked asphalts from high-sulfur crude are entirely satisfactory for road oils and meet all specifications without difficulty. By segregation of stocks it has been possible to make relatively few changes in the marketing of products.

Poly Operations

The gases from cracking operations are laden with hydrogen sulfide and methyl mercaptan and it is necessary to remove them in order to prepare a C_3-C_4 feed for polymerization. Failure to remove these sulfur compounds results in poor catalyst life and an extremely high-sulfur, sour polymer with poor tetraethyl lead response.

At Globe, the C_3-C_4 poly feed is put through a Girbotol amine unit to remove hydrogen sulfide and then a caustic solution to remove mercaptan. This has been found to be an economical, efficient way to prepare a good low-sulfur poly feed with sour-crude operation. In 15 months' operation the Girbotol amine unit has processed over 1 million barrels of poly feed and the original charge of amine is still in use with no loss of chemical or decline of activity for removal of hydrogen sulfide.

Corrosion Protection

One of the prime questions is, "What will the corrosion problem be with sour-crude operation?" When we first started processing sour crudes the facilities were mostly carbon steel. As replacements are made the trend has been to make replacements with alloy materials.

Crude tanks. — The crude-storage tanks are the first contact with sour crudes. One of the floating-roof tanks is painted inside with Sherwin-Williams "crankcase sealer" paint and the other floating-roof tank is unprotected. Neither of these has been inspected recently so no information is available as to the relative corrosion on the painted and unpainted roofs. The one cone-roof tank in sour-crude service is unprotected and has shown evidences of corrosion on the roof after 5 years' service.

Desalters.—The desalter vessels for the combination unit are lined with lumnite-haydite cement. The vessels for the topping unit are not yet lined but are scheduled for lining with the same material. These vessels were replaced about 18 months ago. The previous vessels were old, used vessels so it cannot be stated that there was excessive corrosion from sour crude. The piping from the crude tanks to the desalter exchangers is carbon steel.

The piping from the exchangers to the desalters to the units is being replaced with 4-6 chrome. This piping has been in service since construction of the unit so again it cannot be stated that there is excessive corrosion from sour crude.

Fractionating towers. — The crude fractionating towers are lined in the lower sections with 11-13 per cent chrome steel. From the top down to about the fourth tray the lining and decks are Monel. The general practice has been to use Monel for temperatures below 400° F. and 11-13 per cent chrome steel for temperatures above 400° F. The fractionating tower on the cracking side of the combination unit has cast iron trays in the top half and 4-6 per cent chrome trays in the bottom half. The bottom half of the shell is lined with 11-13 per cent chrome and the upper half is unlined.

The vapor separator on the cracking side of the combination unit is lined with 11-13 per cent chrome approximately two-thirds of the way down from the top and plans are made to complete the lining of this vessel.

Most of the process piping is 4-6 per cent chrome, ½ per cent moly.

Furnaces.—All furnaces have 4-6 per cent chrome, ½ per cent moly tubes and headers. Tubes are scheduled to be replaced with 7 per cent chrome steel as replacements are required.

It has been found necessary to replace, at about yearly intervals, the recuperator envelopes in the air ducts of the furnaces because of corrosion from burning high-sulfur gases in the furnaces.

Crude exchangers. — Most of the crude heat exchangers are made of 11-13 per cent chrome tubes and tube sheets. On the larger exchangers the shells are lined with 11-13 per cent chrome.

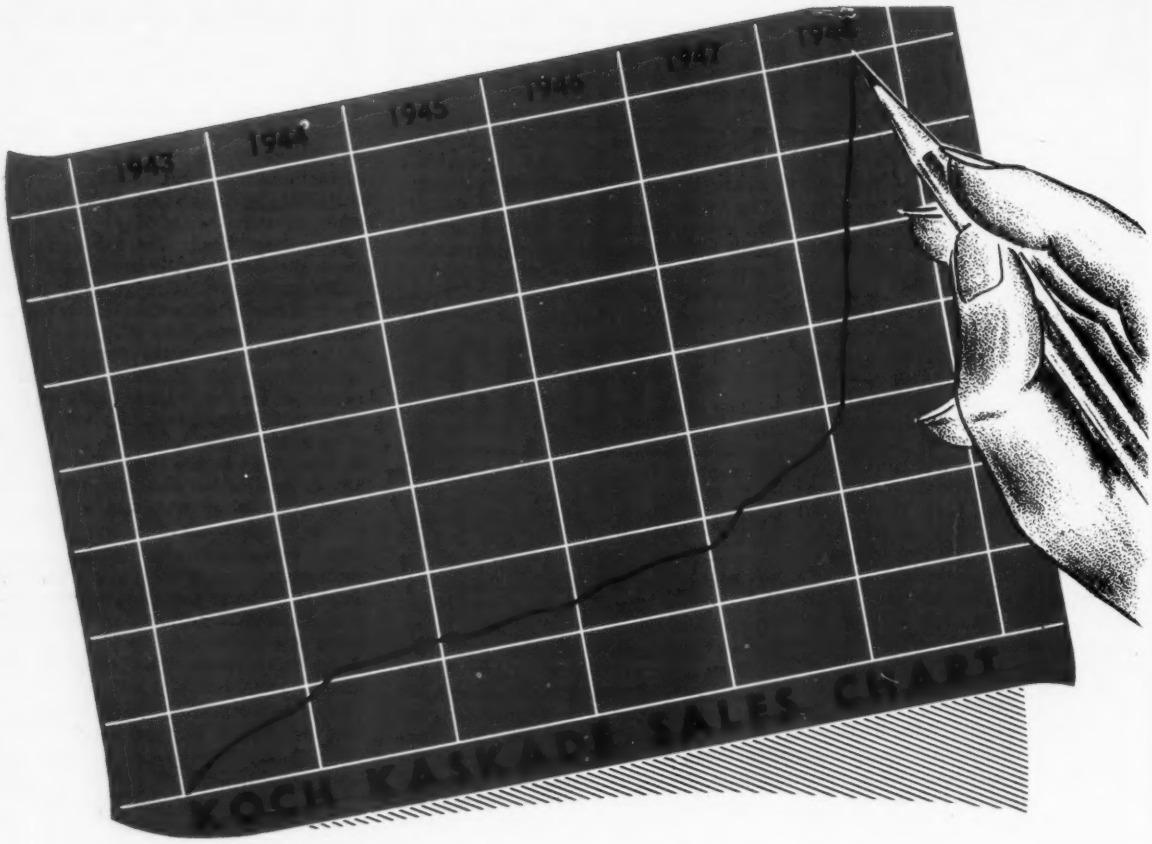
Condensers.—All products condensers are arsenical admiralty tubes with Ni-Resist heads and tube sheets.

Desulfurization unit. — The desulfurization unit is all carbon steel with the exception of the reactor effluent to charge heat exchanger which is 7-9 per cent chrome.

In general, the service is quite satisfactory when processing sour crude with the above type of equipment.

Operating periods have been limited to 100 days on both topping and cracking units. Inspections are thoroughly and carefully made during shutdown periods and repairs or replacements made where necessary.

Chemicals, as well as alloys, are used to minimize corrosion. Ammonia is put in the vapor lines of the topping sections and lime is used in the charge to the cracking furnaces. Soda ash is used in the desalter for neutralization as well as conditioning of the emulsion.



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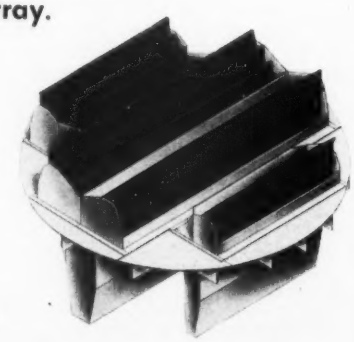

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Survey of Characteristics of Marketed Aviation Gasolines

by W. C. Holliman, M. G. Barker,* Nancy Potts**

THIS second of a series of reports on the characteristics of commercial aviation gasolines presents inspection test data furnished on their products by 15 manufacturers of commercial grades of aviation gasoline and special data obtained in Bureau of Mines laboratories on samples of these gasolines. It covers July 1947 production, as given in U. S. Bureau of Mines Report of Investigations 4353. Data on 18 grade-80, 20 grade-91/98, 20 grade-100/130, and 9 grade-115/145 aviation fuels are presented.

Inspection test data on these characteristics of their products ordinarily listed in aviation-gasoline specifications, such as AN-F-48a or A.S.T.M. Designation D910-47T, were furnished by the participating manufacturers, and, as reported, generally meet such specifications. Three grade-80 gasolines show a small tetraethyl lead content. Average tetraethyl lead content for the 91/98, 100/130, and 115/145 grade fuels are 2.77, 3.52, and 4.49, respectively.

Two grade-80 gasolines are dyed blue; all other grade-80 gasolines do not contain a dye color. All gasolines in the 91/98, 100/130, and 115/145 grades are colored blue, green, and purple, respectively. Distillation requirements generally are met by gasolines of all grades, with a few exceptions at individual points. Reid vapor pressure, copper-dish residue, heat of combustion or aniline-gravity constant, freezing point, copper-strip corrosion, and sulfur-content requirements are met by all gasolines so far as reported.

The special data obtained in Bureau of Mines laboratories on samples of these gasolines include distillation characteristics, vapor pressure, specific gravity, and viscosity. These data are found to be close to those obtained in the preceding survey.

The surveys of the characteristics of commercial aviation gasolines are made by the Bureau of Mines under a cooperative agreement with the Coordinating Fuel and Equipment Research Committee of the Coordinating Research Council, Inc. The work is in part a continuation in expanded form of surveys conducted since 1940 by the National Bureau of Standards under a similar cooperative agreement. The surveys were begun by the Bureau of Mines in 1947.

So far as possible, comparisons are made between the data obtained in the current survey, the previous Bureau of Mines survey,† and the data obtained in the earlier surveys made by the National Bureau of Standards. Comparative data on some of the characteristics of the gasolines examined in the March 1947 and July 1947 surveys are given in the accompanying table.

*Bureau of Mines. Article is Bureau of Mines Report of Investigations 4353.

†Holliman, W. C., Barker, M. G., and Potts, Nancy. Survey of Commercial Aviation Gasoline Characteristics, March 1947 Production (U. S. Department of the Interior, Bureau of Mines Report of Investigations 4273, May 1948). Summary report published by The Oil and Gas Journal, July 8, 1948, pp. 98-99.

COMPARATIVE DATA BY U. S. BUREAU OF MINES ON AVIATION GASOLINE CHARACTERISTICS, MARCH 1947 AND JULY 1947 PRODUCTION (AVERAGE BY GRADES)

	Grade-80		Grade-91/98		Grade-100/130		Grade-115/145	
Test—	March 1947	July 1947	March 1947	July 1947	March 1947	July 1947	March 1947	July 1947
Octane No.:					Iso. +	Iso. +		
Lean mixture*	80.4	80.5	93.3	93.0	0.15	0.16		
Rich mixture†			98.6	98.9				
Performance No.:								
Lean mixture*					105.9	106.1	118.2	117.9
Rich mixture†					130.9	131.2	148.0	146.8
Tetraethyl lead, ml./gal.	None	None	2.80	2.77	3.36	3.52	4.35	4.49
Reid vapor pressure, lb.	6.4	6.3	6.5	6.3	6.3	6.3	6.3	6.5
Aniline point, °F.	145	146	139.8	140	152.7	153	157.6	156
Distillation characteristics, °F., evap. basis:‡								
10 per cent	150	150	148	150	152	150	151	148
50 per cent	197	196	198	198	207	207	212	211
90 per cent	242	238	241	240	246	246	243	245
Sulfur, wt. per cent	.015	.017	.018	.019	.016	.020	.030	.019
Specific gravity, 60°/60° F.	.705	.705	.710	.712	.702	.703	.701	.701
Viscosity, kinematic, 70° F., cs.	.604	.603	.606	.606	.615	.618	.616	.613

*A.S.T.M. D614-46T (C.R.C. F-3, AN-F-19). †A.S.T.M. D909-47T (C.R.C. F-4, AN-F-18) ‡A.S.T.M. D86-46.

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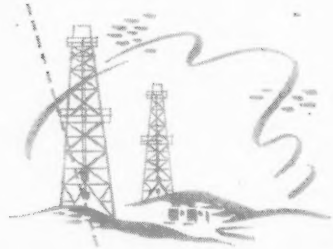

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1947 Geophysical Activity In the United States

(Continued from page 73)

the work of the geophysicists has not been lacking in genius. They have put a goodly measure of inspiration into their work and also plenty of perspiration.

Although geophysical prospecting techniques had their beginnings abroad (torsion balance, refraction seismograph), practically all important developments of the past 25 years had their origin in the United States (reflection seismograph, gravimeter, airborne magnetometer). Although data for this are hard to come by, one can safely say that the world over the geophysical business is dominated by Americans to a degree that few other businesses are. It seems to be a safe guestimate that over 95 per cent of the world's geophysical work is currently being done by United States geophysical organizations.

It is regretted that I am unable to give you a picture of the extent and distribution of geophysical operations abroad. It is hoped that the assembly of such information can be organized to round out the report for the current year.

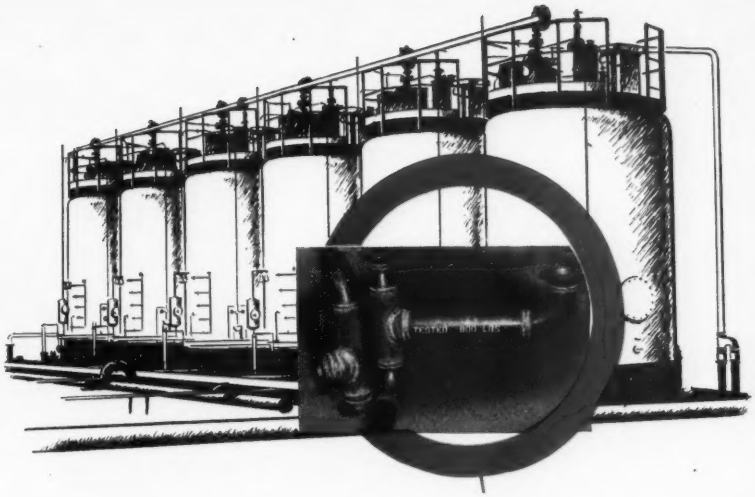
For many years, the bulk of the petroleum products produced in the United States will undoubtedly come from drilled wells. A major contribution to the discovery of the pools in which they will be drilled will be made by the big three of geophysical prospecting, the seismograph, the gravimeter, and the magnetometer. The procedures used have not been and will not be static. This is not to say that other techniques will not be important, but there appears no prospect at present that a fourth technique will displace any of the present leaders. There is every prospect that the volume of geophysical activity will reach a new all-time high in 1948.

Study of Industrial Dispersion Planned

WASHINGTON.—The National Security Resources Board will make an intensive study of the dispersion of industrial plants as a safeguard against atom bomb attack.

Gayle W. Arnold, Baltimore safety expert with long experience in industrial and military plant security and location, was appointed head of the plant dispersion division, one of some 30 units now being staffed for industrial mobilization planning.

The board recently issued a report in which it held that communities of less than 50,000 population were unlikely targets for enemy bomb attacks, and offered the most desirable locations for plants in vital industries.



SALT IS GOOD ON TOMATOES — BUT NOT IN CRUDE OIL

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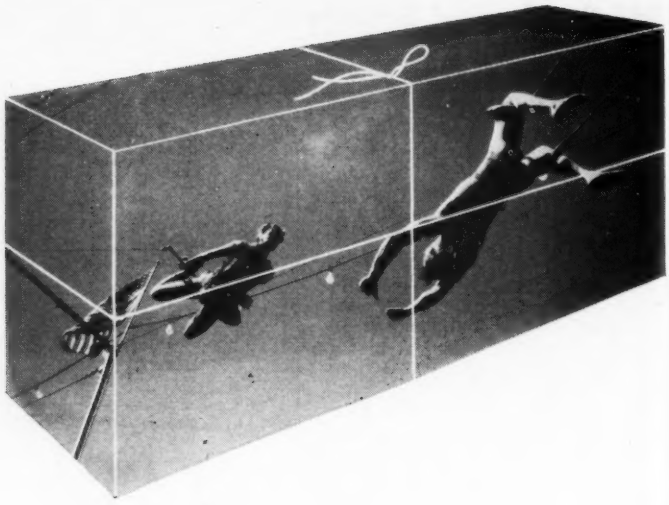

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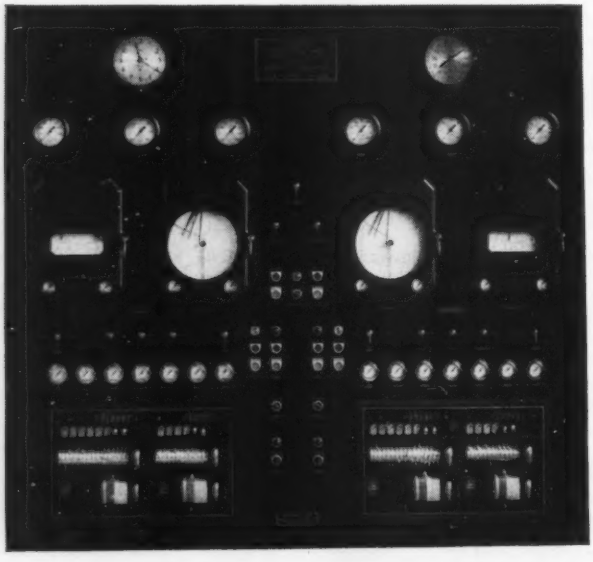

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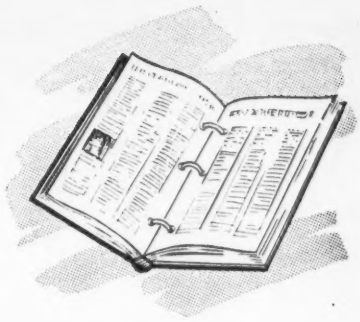
A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL



Power for Pump Drives

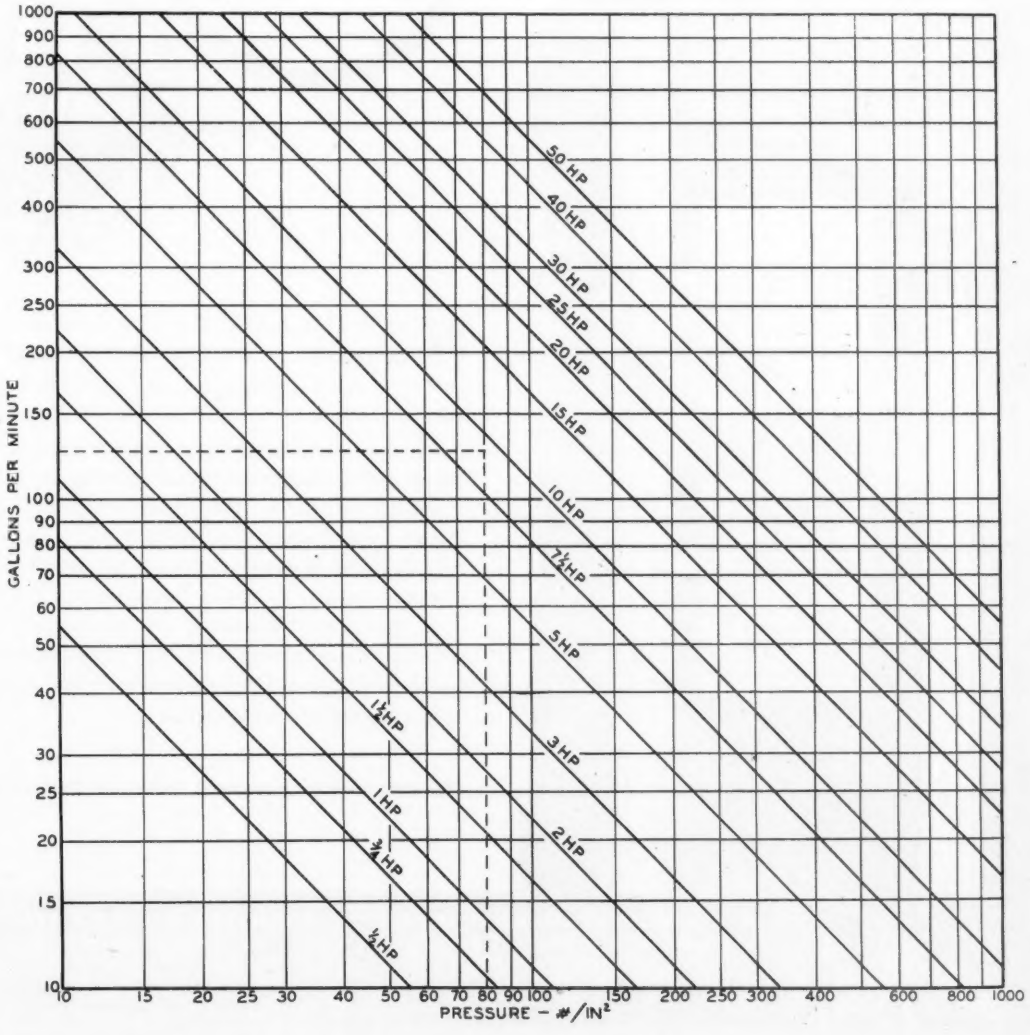
Example.—The motor to drive a pump which delivers 125 g.p.m. against a head of 80 psi. (discharge minus suction pressure) requires a 9-hp. motor. Trace 80 psi. upward to the horizontal line for 125 g.p.m.

If the pump plate shows the pressure in feet of heat of water, the head should be multiplied by 0.43 to obtain the pressure in psi.

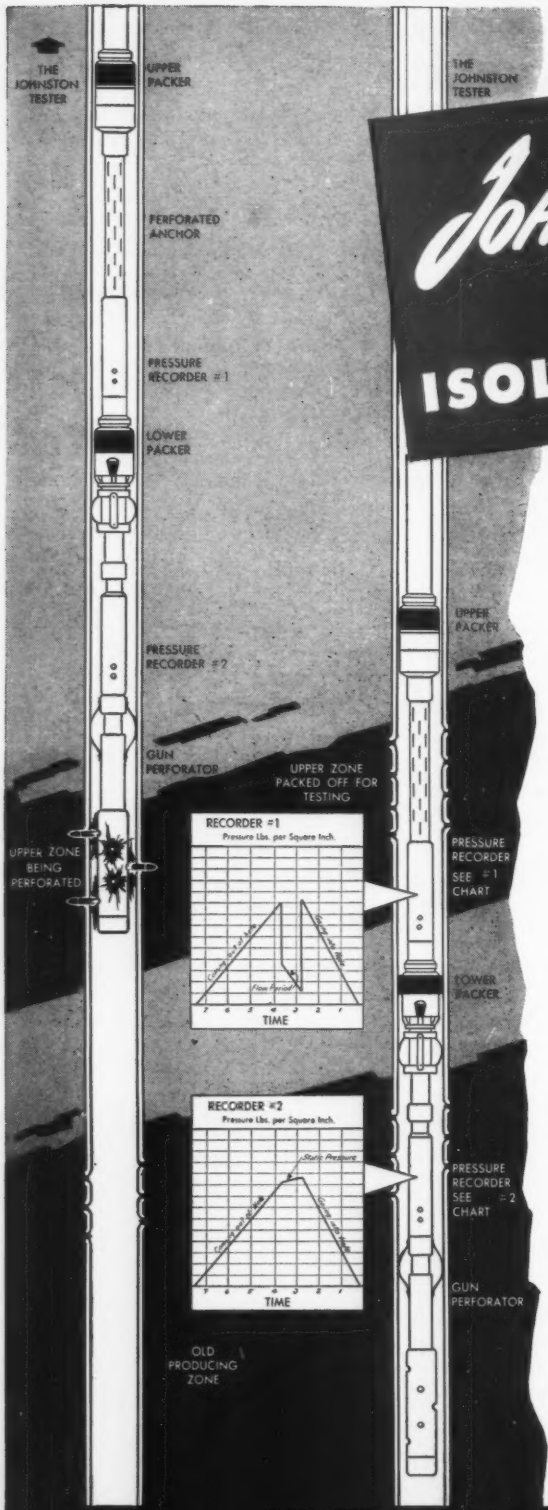
Basis.—The chart is based on a pump efficiency of 72 per cent and a transmission mechanism efficiency of 90 per cent. Most centrifugal pumps have a higher efficiency and directly connected motors have no transmission loss.

W = lb. liquid.
h = feet of liquid.
ΔP = pressure difference, psi.
G = g.p.m.
d = specific gravity.
E_p = efficiency, pump.
E_t = efficiency, transmission.

$$\text{H.P.} = \frac{Wh}{33{,}000\,E_pE_t} = \frac{\Delta PG}{1{,}713\,E_pE_t} = \frac{Ghd}{3{,}957\,E_pE_t}$$



No. 216 in a series by W. L. Nelson, professor of petroleum refinery engineering, University of Tulsa



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As shown at left, the complete assembly for *both* perforating and testing consists of (1) a regular Johnston Testing Tool; (2) a straddle packer assembly including an upper packer, a perforated anchor, a pressure recorder and lower packer; (3) a second pressure recorder and (4) a regular Johnston Gun Perforator. This Johnston combination of run-in, perforating, packing off and testing is a faster, smoother operation for testing your isolated formations – and it requires only a minimum of down-time!

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ENGINEERING *fundamentals*

Averaging Reservoir Pressures

THE measurement of reservoir pressure is necessary as a preliminary to the analysis of reservoir performance, to the calculation of productivity indexes, to the evaluation of reserves, to the institution of repressuring, and to the inauguration of proration schedules. It may be necessary to know the reservoir pressure as a value to use directly in an equation and it is sometimes necessary to know the reservoir pressure in order to define the numerical values of the physical characteristics of the reservoir fluids at a particular time.

It is pertinent to give some thought to the means of arriving at a value for reservoir pressure. The instrumentation of pressure measurement and the techniques of running bottom-hole-pressure bombs will not be discussed in this present section. It will be assumed that a pressure measurement can be made with reasonable accuracy at any desired point in the bore hole.

Consider first the value of static reservoir pressure for a given well. The term bottom-hole pressure or sand-face pressure is applied to the pressure opposite the producing horizon. Since the producing horizon is not a single point of depth a different value of pressure will apply depending upon the placement of the measuring instrument at the top, bottom, or center of the producing section. If the one well were the only access to the entire reservoir, the logical place to record a single measurement for an average would be the center of the producing section. For a value of pressure in analyzing the behavior of a single well (such as a P. I. test) this is the logical value to apply.

For Proration

Again, consider the case where a value of pressure is desired in order to give a weight to the well for proration purposes. In such an instance the pressure measurement is meant to designate the dissipation of reservoir energy at that particular location. If the reservoir were a tank or pipe lying at an angle, each well at the level of the producing horizon would measure a pressure value under static conditions depending on the position of the well on structure. In other words, the pressure measured at each well under static conditions will reflect the position on structure as well as amount of energy lost and any measurement designed to be used as a measure of energy present should account for such structure differences. In such a case, therefore, all present measurements would logically be referred to some datum plane and for a static reservoir, all wells would measure the same pressure at the same datum plane. The selection of a datum for pressure measurements is usually a matter of convenience. It is not always possible to measure pressures in wells at the datum plane, in which case, therefore, all pressure measmeasurement to the datum plane must be found.

No Common Level

In the event reservoir pressures are measured to obtain an average pressure for defining a numerical value of some physical characteristic, further thought must be given. The pressure used to designate physical constants would most logically be that which is present at the gas-oil interface. In an open tank such a level could easily be found. In a reservoir, however, there is no common level of gas oil interface. Such interfaces exist through the entire reservoir. The physical characteristics of a given portion of the reservoir are defined by the pressure within that portion, not at some datum plane. However, should a datum plane be used for reference its selection midway in structure would appear to give the best representation for all wells.

The pressure measured at the center of each producing well section is applicable to the volume from which that well drains. Assuming uniform drainage, it is then applicable to a volume measured by the spacing for the well times the thickness of the productive section. If averages are made on an areal basis there is included the basic assumption that the formation is uniform in thickness.

The differences between arithmetically averaged pressures, areally averaged pressures, and volumetrically averaged pressures is sometimes quite large. The following two tables taken from the literature show appreciable differences.

TABLE 1*

Date—	Average productive volume pressure	Average acreage pressure
Sept. 15, 1924	912.2	944.7
July 13, 1927	831.6	887.1
Feb. 7, 1929	768.8	840.2
Sept. 30, 1932	689.3	769.9
March 25, 1936	594.3	688.2
May 31, 1939	505.8	606.6
Oct. 31, 1941	443.5	538.2
July 31, 1942	415.5	508.8

*D. T. MacRoberts; The Monroe Gas Field and Its Pressure Behavior, Mid-Continent A.P.I. Meeting, Amarillo, Texas, May 1947.

TABLE 2*

End of month—	Areal average pressure	Volumetric average pressure
Sept. 17, 1937	3,548	3,548
Jan. 1938	3,459	3,448
July 1938	3,148	3,153
Jan. 1939	2,790	2,813
July 1939	2,468	2,533
Jan. 1940	2,265	2,318
July 1940	1,900	1,978
Jan. 1941	1,598	1,658
July 1941	1,528	1,542
Jan. 1942	1,517	1,524
July 1942	1,517	1,510

*H. H. Kaveler, Engineering Features of the Schuler Field and Unit Operation, A.I.M.E. Trans., 1944 (Vol. 155).

Series by Dr. John C. Calhoun, Jr., Chairman, Petroleum Engineering School, University of Oklahoma

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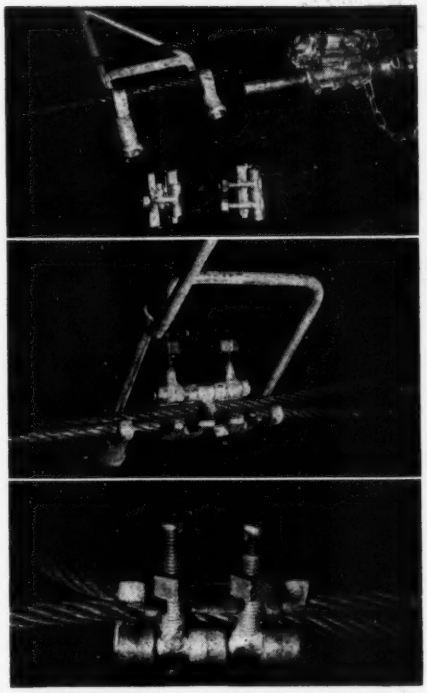
OIL AND GAS EQUIPMENT Digest

IT'S NEW CHECK IT

by Craig Espy

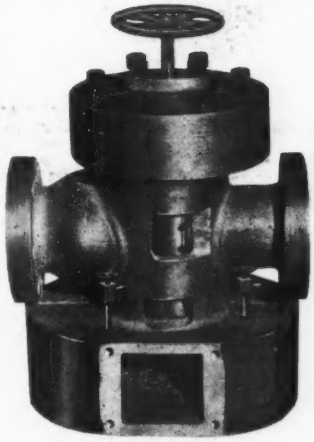
(1) NEW WIRE-ROPE CLIP features positive holding action and requires only 1½ minutes to install. Part contacting with rope is grooved to conform with the lay of rope, preventing slippage when the two ropes are meshed



together. In applying clip to wire line a special clip socket wrench holds the wire lines together while the clip is put on. Nut is finger tightened to hold in place, then wrench tightened for security. *Smith Devices.*

IT'S NEW CHECK IT

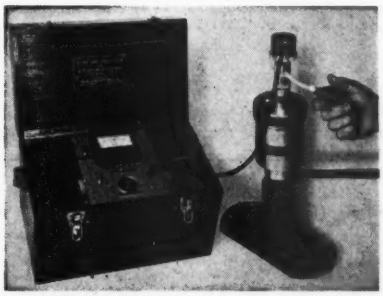
(2) NEW VALVE STRAINER provides an efficient method for separating foreign particles from liquids and permits cleaning out without shutdown of pipe line. It is composed of a body, the lower portion of which is provided with a sediment-collection chamber, a cleaner and valve combined, and a cylindrical steel screen. Body is constructed of seamless pipe, plate, and steel flanges welded construction throughout; screen is of perforated steel or brass. Cleaner and valve is a standard type. Inlet pipe of body is designed to fit snugly around screen which is provided with an inlet opening and suitable perforations. Screen area is six times the area of the inlet pipe. A bypass tube and valve permit channeling of fluid from sediment chamber back to the body when required in seating the valve cleaner in its final closing operation. A similar bypass arrangement facilitates raising the valve disk. *Corbett Corp.*



IT'S NEW CHECK IT

(3) PORTABLE CORE-GAS ANALYZER detects and measures hydrocarbon gases contained in core samples and cuttings.

Unit enables operator to detect and determine, immediately upon taking a core from well, pressure and relative volume of gas present in formation. Coring proce-



The Oil and Gas Equipment Digest presents a review of what is new in equipment and trade literature . . . makes it possible for readers to obtain full information on every subject by use of convenient "Check It—Mail It" service card. This periodic feature of The Oil and Gas Journal will include all that is new in equipment . . . at a time when new products are being introduced, and existing products improved.

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dure and drill-stem-test points can be decided right at rig without delays for laboratory analysis.

Core, or samples of cuttings, is crushed hydraulically under pressure from 6,000 and 10,000 psi., thereby collapsing all pore space within the core and releasing any gas present. Gases are withdrawn from crusher through a vacuum system and flow into the instrument for measurement.

Should sample contain only a very minute amount of gas, it would nevertheless be indicated and measured. Although the amount of gas is so small that it will not openly burn, it is sufficient to create a thermal combustion effect across the sensitive platinum element which is used as catalyst, thus effecting an electrical bridge circuit. Readings are taken direct from the gas-volume meter. No complicated computations or formula required. Electrical current is provided by dry-cell batteries contained in the unit.

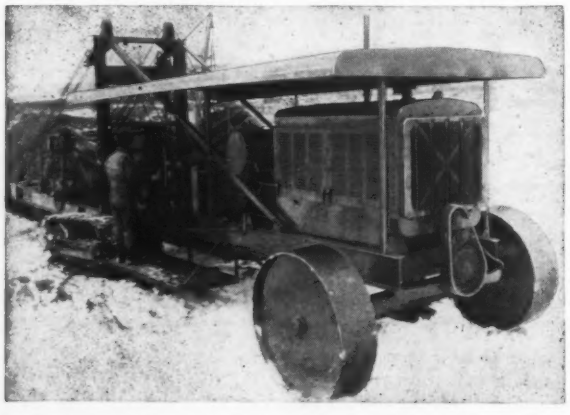
Instrument is light-weight, easily portable. *Petroleum Instrument Co.*

IT'S NEW CHECK IT

(4) KEL-F is a stable, high-temperature thermoplastic. New plastic is extremely resistant to chemical action. No effect has been observed after prolonged exposure to concentrated sulfuric, hydrofluoric, and hydrochloric acids; to strong caustic, fuming nitric acid, aqua regia, and other vigorous oxidizing materials. Pump packings, valve seats, and valve packings, wherever corrosive gases and liquids are processed, are excellent applications of Kel-F. Its transparency makes it a good substitute for glass in gage glasses, flowmeters, etc., where glass would be attacked. It has satisfactory properties over a temperature range of 700° F.—from a low of minus 320° F. to a high of 390° F. *M. W. Kellogg Co.*

IT'S NEW CHECK IT

(5) NEW PIPE-LINE DITCHER features wider buckets, available in 32 and 40-in. widths, which with side rooters cut a ditch 38 or 40 in. and 48 or 51 in. wide, respectively. Buckets readily excavate ditch for 30-in. pipe line. Another improvement is the crawler unit. Section of plank



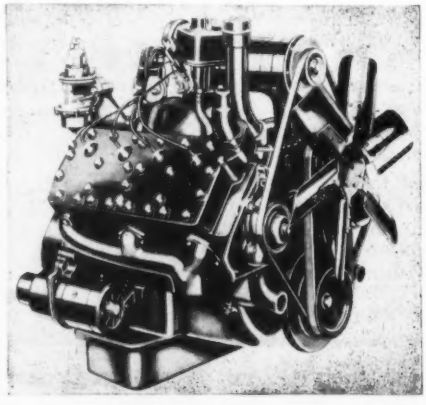
formerly used for treads have been replaced with wide steel treads. These nonclogging self-cleaning treads insure good traction and a wide bearing area. Automatic safety lock removes hazard from uphill digging. Two raising or lowering motions of digging wheel, which is driven through a constant chain drive, self-compensates for any wheel position. Buckets are equipped with new replaceable rooter bit. Bits fit into a slot in the holder and are readily replaceable. Rooters are staggered alternately on buckets, providing overlapping cutting so that no ridges are left on digging face to impede buckets. *Findlay Division, Gar Wood Industries, Inc.*

IT'S NEW CHECK IT

(6) NEW OIL-FIELD TRUCK, one of the largest standard production vehicles ever built, mounts an oil-field platform body built by Truck Equipment Co. of Norwalk, Conn. Designed for hauling tremendous loads off the road, new truck has a gross vehicle weight rating of 115,000 lb. and a wheelbase of 247-62 in. Frame is electrically fused into a single massive piece capable of carrying great loads and withstanding tremendous shock. Huge alloy-steel I-beam side members are reinforced and joined by five cross members. Trunnion cross member is well gusseted to side rails. Torsional rigidity and beam strength are exceedingly high. Load platform is 18 ft. 6 in. long. Body floor is 4-in. oak, covered with 5/16-in. steel deck plate for its entire length. Gin poles, A-frame, and rolling tail pipe are included in body equipment. Tulsa Model 80 winch of 65,000-lb. capacity is conventionally mounted behind cab. Balanced Bogie eliminates wheel fight, tire scuffing, and consequent power loss. *Mack Trucks, Inc.*

IT'S NEW CHECK IT

(7) NEW INDUSTRIAL ENGINE is offered in five models—the 337 and 239 V-8's; the 254 and 226 six-cylinder; and the 120 four-cylinder. Numeral designation indicates cubic inches of piston displacement. The 337 V-8 bore

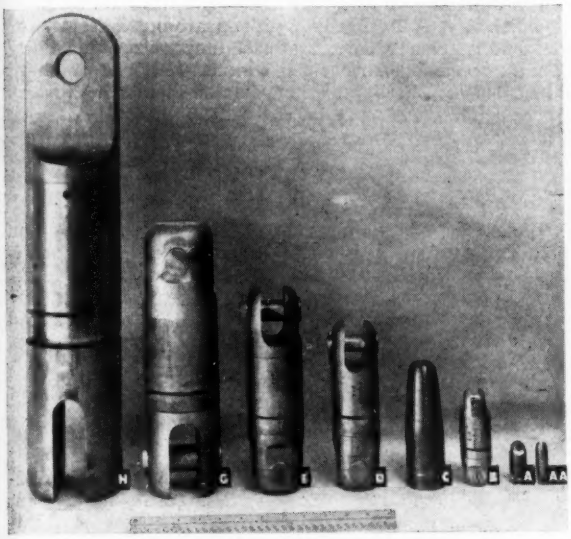


and stroke is 3½ by 4⅜-in. and compression ratio, 6.5 to 1. It develops 258 ft.-lb. torque and has porportionate horsepower output. The 254 six-cylinder engine bore and stroke is 3½ by 3¾-in. and compression ratio, 6.7 to 1. It develops 211 ft-lb. torque. The 239 V-8 engine has bore and stroke of 3⅞ by 3¾-in.: compression ratio, 6.8 to 1.

developing 187 ft.-lb. torque and comparable horsepower. Bore and stroke of the 226 six-cylinder engine is 3.3 by 4.4-in. and compression ratio, 6.7 to 1. Maximum torque is 193 ft.-lb. The 120 four-cylinder engine has a 6.5 to 1 compression ratio and $3\frac{3}{16}$ by $3\frac{3}{4}$-in. bore and stroke. Cylinder sleeves are removable dry liners. *Ford Motor Co.*

IT'S NEW CHECK IT

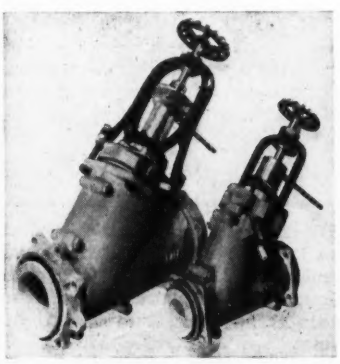
(8) BALL-BEARING SWIVEL eliminates twist and line laying in wire rope used in all oil and gas operations. Because of the reaction from the annular thrust swivel, loads arrive at destination in almost the same position as they leave point of origin. Design of swivels makes possible the use of entire bearing surface of three ball



races. Freely rolling surfaces provided enables swivel to carry maximum load for the smallest diameter and length possible. Swivel bearings are protected from dirt and water by a heavy, life-time grease packing. Assembly is made under pressure to force all vacuum pockets from bearing chambers. Swivels are precision machined of high-strength steel in sizes comparable to wire rope and are available in 10 different styles—hook and clevis, clevis and eye, swedge and stud, etc. Swivels are cadmium plated to prevent rust and deterioration. *General Machine & Welding Works.*

IT'S NEW CHECK IT

(9) ARMORED PORCELAIN VALVES feature high-strength, heat-treated silicon aluminum armor. Body, plug, retaining rings —all parts with which chemicals can come in contact— are solid, nonporous porcelain. Addition of armor provides protection for personnel and equipment against porcelain breakage from carelessness or accident. Armored Y valves are available in 1 to 6-in. sizes. Armored angle valves are in 1 and 2-in. sizes. Armored flush valves are in 1½ to 5-in. tank outlets. Standard



125-lb. flanges are integral with armor; porcelain faces are machine-ground smooth and flat for gasketing. *Lapp Insulator Co., Inc.*

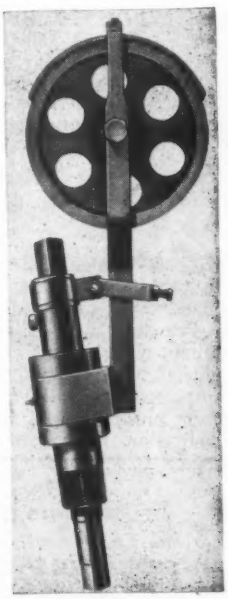
IT'S NEW CHECK IT

(10) NEW TOURNAHAULER hauls heavy-length loads such as pipe, steel, machinery, etc. Machine (45,000 g.v.w.) navigates mire, sand, grades, and sharp turns of off-road travel but also travels on highways. Features

include torque proportioning differential, electric power steer permitting full 90° turn, and proper distribution of load on both front and rear wheels. Extra large, low-pressure tires afford flotation that helps get through under tough hauling conditions. *R. G. Le Tourneau, Inc.*

IT'S NEW CHECK IT

(11) WIRE-LINE STUFFING BOX (10,000-psi. test) can be removed or replaced under pressure. Heavy-duty safety features include: single-piece extra-strong body; internal blowout-preventer plunger which is used also when it becomes necessary to change packing under pressure; combination gland nut and oil cup which can tighten packing and lubricate line; and a 10-in. sheave that handles heavy lines. *Otis Pressure Controls, Inc.*



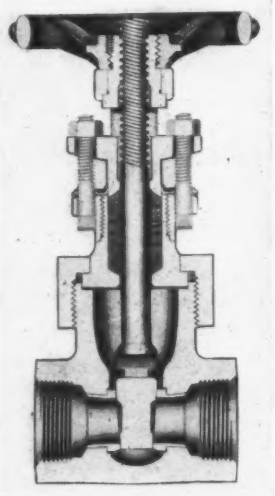
IT'S NEW CHECK IT

(12) EXPENDABLE FISH-TAIL BIT drills in soft, moist formations where caveins and sloughs are encountered or where "jetting" is necessary. Under field conditions of this type, drilling and casing setting are performed in one operation. Water course in bit is directed straight down into the formation

being drilled. This gives effective penetration and better cutting action at the blades. *Jones & Laughlin Supply Co.*

IT'S NEW CHECK IT

(13) 600-LB. STEEL GATE VALVES are union-bonnet type. In sizes ¾-in. through 2-in. bonnet ring, bonnet, and yoke are separate parts; from ¼ through ½-in. these parts are cast in one piece. Joint between body and bonnet is sealed with soft-iron gasket, which is not affected by high temperatures or by any fluids for which valve is recommended. Valve has an outside screw and yoke. Stuffing box is deep enough on valves over ¾ in. to hold six rings of square packing. Gland is held by two T-head bolts fitted into slots in the yoke and can be adjusted easily. *Crane Co.*



IT'S NEW CHECK IT

TRADE LITERATURE

(14) CONCRETE RIVER WEIGHT. Reinforced with preformed steel bars, weights are made of 3,500-psi. early-strength concrete. Weights have been drop-tested from a height of 15 ft. with no apparent damage. River-bottom tonnage is based on 1½ times cast-iron weight. Weights, complete with bolts, are available in all pipe sizes. *Allen Edwards, Inc.*

IT'S NEW CHECK IT

(15) NEW MUD-PUMP HOSE stands up under highest vacuum pressures. Collapse under suction is prevented by heavy steel wire imbedded in tube and by prestretched weftless cord that adds tensile strength without weight and stiffness and makes hose easier to move. Tube is made of smooth-bore Armorite rubber compound, specially developed to resist abrasion, cut down pump jitters, and keep abrasive mud moving through at high speed without roughing tube's inner surface. *B. F. Goodrich Co.*

IT'S NEW CHECK IT

(16) SHRINKWELD SLEEVING. A four-page pamphlet covers the "Shrinkweld" method of sleeving tool joints, drill collars, etc. Process is illustrated by sequence photographs. *Hendershot Tool Co.*

IT'S NEW CHECK IT

(17) INDUSTRIAL WATER TREATMENT. New booklet describes industrial water-treatment problems and modern methods of solving them. Booklet of particular interest to plant engineers, is printed in two colors and illustrated with pertinent photographs and charts. *Bird-Archer Co.*

IT'S NEW CHECK IT

(18) METAL-FOIL PACKINGS. New three-color illustrated booklet describes metal-foil packings constructed of thin metal foil spirally wrapped around a fibrous or nonmetallic center core. Material emphasizes durability of metal wearing surfaces in contact with rod or shaft. Construction and application details included. *Garlock Packing Co.*

IT'S NEW CHECK IT

(19) FIRE-FOG. A 3-color 26-page catalog describes an advanced system of fire protection for extra-hazardous areas where highly flammable liquids and solids are involved. Numerous illustrations of many refineries and plants show fire-fog system in relief. System designed for all petroleum applications. *Automatic Sprinkler Corp. of America.*

IT'S NEW CHECK IT

(20) PETROLEUM PLANTS AND PROCESSES. New 62-multicolor brochure describes how construction firm has applied distillation heat transfer and flow of fluids in modern chemical and petroleum-plant designs. Featured are 30 refining processes with accompanying diagrammatic flow charts. Field photographs included. A must for the process engineer. *Lummus Co.*

IT'S NEW CHECK IT

(21) TANK-SUCTION & LINE HEATERS. New illustrated bulletin contains descriptive information on tank-suction heaters, line-suction and line-pressure heaters. Cross-section drawings are accompanied by dimension tables. Capacities are given in three-page table. Eight pages. *Brown Fintube Co.*

IT'S NEW CHECK IT

(22) TRUCK-MOUNTED DRAGLINE. New four-page folder gives information and specifications on truck-mounted dragline. It travels at truck speeds from one job to another. Interchangeable features provide versatility in loading, dragging, ditching, and backfilling. Illustrated. *Schield Bantam Co., Inc.*

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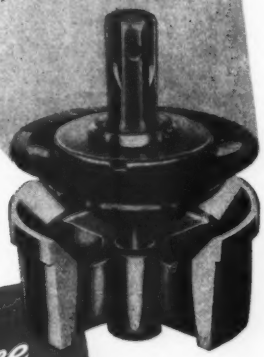

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REFINING

Phillips Starts Work on Houston Chemical Plant

Phillips Chemical Co., subsidiary of Phillips Petroleum Co., took possession September 23 of the 338-acre Todd Shipyard on the Houston Ship Channel, purchased from War Assets Administration, and immediately changed the name to Port Adams for K. S. Adams, president of the company.

The company will start construction at once on a chemical plant designed to produce 266,000 tons of ammonium sulfate annually, and expects to reach half this capacity in December and full output early in 1949. The entire production will be taken by the U. S. Army until June 30, 1949. Chemical Construction Corp. will erect the plant, and dock and marine work will be done by Brown & Root, Inc.

Anhydrous ammonia will be supplied the sulfate plant from the Cactus Ordnance Works near Etter in the Texas Panhandle, which was leased to Phillips Chemical Co. by the Army in August and is now producing 200 tons of ammonia per day. The company is now rushing construction of additional facilities to double the capacity of this plant so it can also supply an ammonium nitrate plant Phillips is constructing near Etter.

Port Adams will be used as an import-export terminal and will be operated in conjunction with the Phillips petroleum products terminal nearby and for supplying foreign operations and Gulf Coastal drilling of Phillips Petroleum Co.

Port Socony Terminal Being Greatly Enlarged

Progress on the Port Socony terminal storage plant, the largest on the East Coast, has reached the halfway mark. Port Socony is on Staten Island, near Charleston.

With four new storage tanks, being erected by Chicago Bridge & Iron Co., the total storage capacity at Port Socony will be 3,000,000 bbl.

Port Socony was the easternmost terminal of the wartime "Big Inch" crude-oil pipe line. These facilities were acquired from the Government by Socony-Vacuum Oil Co.

A feature of the new improvements is an unloading rack designed to service the largest tankers which will be off the ways within the next few months. The rack is capable of taking four to six different products from a tanker simultaneously compared with only two unloading lines used for smaller-type vessels.

Other features of the expansion program include concrete dock coverings, an oil-barge cleaning and separating plant for water-contaminated oil, modernization of electrical equipment and wiring, and a doubling of the port's steam plant capacity to 1,500 hp.

Meanwhile, extensive dredging operations to provide berths for the super tankers are being carried out.

Royalty Oil to Be Sold at Field Price to Small Refiners

Government royalty oil previously sold to highest bidders in the small refining group will now be sold at field prices to small refiners whose needs are greatest.

Acting Secretary of Interior C. G. Davidson in explaining the new policy said that it was more in line with the intent of Congress to relieve the pinch on refineries producing less than 15,000 bbl. per day and who have had trouble competing with big refineries for available crude-oil supplies.

The department in the future will offer 2,000 bbl. of oil daily at field prices. First preference will be given to the refineries operating at less than 40 per cent of capacity. Those at less than 65 per cent of capacity will get the next chance and then those at less than 100 per cent.

Celanese Corp. Reopens Texas Petrochemical Plant

CORPUS CHRISTI.—The Celanese Corp. of America's petrochemical plant at Bishop, Tex., which reopened several weeks ago despite a strike by Oil Workers International Union, was scheduled to reach full production this week.

Ken Bowen, plant manager, said many workers have returned to their jobs since the union withdrew its picket lines at the plant. He said the plant was operating early last week at 75 per cent of normal capacity with only one unit not in operation.

Approximately 700 workers were involved when the strike was originally called July 26. The plant uses propane and butane which are oxidized and the mixture fractionated to produce such organic chemicals as acetaldehyde, acetic acid, formaldehyde, methanol, propanol, and acetone.

Abasand Refinery Will Be Moved to Lloydminster

Excelsior Refineries has purchased the Abasand Oils refinery near Fort McMurray in northern Alberta, and is dismantling the plant for shipment to Lloydminster, where it will be used to increase Excelsior's refining capacity to 3,000 bbl. a day. The company has extended its site to 175 acres to accommodate the new plant, which will enable it to produce a full line of petroleum products. The refinery was constructed during the war to treat the oil recovery from the Athabaska tar sands, but was closed down at the end of the war after operating about 5 months.

Atlantic Refining Co. to Have New Dallas Home

Excavation will soon begin on Atlantic Refining Co.'s new 10-story office building in Dallas. The new ultra-modern building will house headquarter activities of the company in the southwest area and of its subsidiary, Atlantic Pipe Line Co.

Occupying a space of 200 by 400 ft. the structure will embody all of the latest construction developments, including welded steel frame-work, aluminum window frames, and use of vermiculite concrete. Indiana limestone facing and complete air conditioning will give the building both dignity and comfort.

Imperial Operating New Units at Montreal Plant

New refinery units utilizing the catalytic process of producing high-octane motor gasolines have recently been put in operation at the Imperial Oil Co. refinery at Montreal East. Construction of this and three other main units, costing around $20,000,000, has been in progress 2 years, and will add 12,000 bbl. daily to the refinery's capacity.

N.P.A. Will Sponsor Trip To Ethyl Corp. Laboratory

A field trip to the laboratories of Ethyl Corp. in Detroit, October 28 and 29, will be sponsored jointly by the departments of manufacture and of standards and tests of the National Petroleum Association.

Discussions will include road performance of a balanced fuel, road knock-test methods with emphasis on

the current interest in the research method, engine test procedures used on lubricating oils, effect of combustion-chamber deposits on octane requirements, octane requirements of passenger cars, and the use of water injection and other means of meeting antiknock requirements.

Acid, Not Wear, Called Main Lubricant Problem

The major cause of wear in automobile engines is not friction but the action of acids resulting from low operating temperatures, Shell Oil Co., Inc., announces as the result of laboratory tests.

When an automobile is run intermittently and on short trips the engine does not reach its best operating temperature with the result that combustion may be incomplete and partially burned fuel gases and moisture attack the smoothly polished metal surfaces, the announcement explained, saying that this may account for 90 per cent of engine wear. The problem now, said the Shell scientists, is to develop additives for lubricating oil which will combat the action of this acid condition.

Canadian Refineries Show Increase Over 1947

Dominion Bureau of Statistics report that Canadian oil refineries turned out 7,176,000 bbl. of refined products in June 1948, an increase of 362,000 bbl. over June 1947. During the first half of 1948 output was 36,288,000 bbl. against 33,544,000 bbl. for the same period of 1947.

A.P.I. Completes Work on First Refinery Manual

A manual of safe inspection practices for refineries has been developed by the American Petroleum Institute and is now available for distribution. It is entitled "Part 1—Process Equipment" of the A.P.I. Manual of Recommended Practices and is the first of six parts of the manual planned for publication by the institute.

Work on "Process Equipment" was started in the late 1930's and had reached the draft stage at the time of Pearl Harbor. Under the pressure of war the project was halted until the Petroleum Administration for War found a need for such a manual in the maintenance of defense plants. The A.P.I. draft was used as the basis for the PAW Manual of Refinery Inspections.

Federal Roads Allocations Announced For Next Year

WASHINGTON.—The Public Roads Administration has announced the sums to be made available to states and territories for highway improvement during the fiscal year which begins next June 1.

Early announcement of the allocation of the $450,000,000 federal-aid fund was made by PRA so that the states may develop their 1950 highway programs and arrange for the matching money required under the law, the states generally having to put up as much as the federal Government.

The largest allocation was $30,085,757, to New York. Texas was given $25,576,747; Pennsylvania $22,180,755; Illinois $20,461,106; California $19,837,243; and Ohio $17,766,952. Georgia, Indiana, Michigan, Minnesota, Missouri, North Carolina, and Wisconsin were given between $10,000,000 and $15,000,000 each.

Emergency Taxes Constitute Hardship on Highway Users

Federal emergency taxes on new cars, trucks, buses, motorcycles, gas, oil, tires, tubes, parts, and accessories, enacted during the war to provide revenue for general government expenditures are becoming a personal emergency to millions of highway users according to Arthur C. Butler, director of National Highway Users Conference.

The emergencies that created these taxes are over and highway users are being specially taxed by the federal Government without any special benefit in return, he said. Taxes thus collected are not intended to go for roads. In urging Congress to repeal these taxes, the conference claims that federal "tax inflation" on the highway user amounts to 129 per cent since 1941.

Shell Buys Refinery Site

Shell Oil Co., Inc., has bought a 280-acre tract on the Rahway River as a possible site for a proposed East Coast refinery, now in the planning stage.

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PIPE LINES

Texas Gas Transmission Starts 63-Mile Section

TEXAS GAS TRANSMISSION CORP. recently commenced construction of 63 miles of 26-in. which is the first step in laying the company's proposed system to Middletown, Ohio, according to W. T. Stevenson, executive vice president. The 63-mile section will connect with the proposed 840-mile Texas-Ohio line.

The initial 63-mile, 26-in., Lulu, Miss.-Memphis, Tenn., section has been contracted in such a way that N. A. Saigh Co. lays the southern half while J. R. Horrigan Construction Co. lays the northern half. Completion is scheduled before the end of 1948. Work on the project was undertaken a year earlier than originally planned because of the early arrival of pipe.

This Lulu-Memphis line will have storage capacity of 67,000,000 cu. ft. Cost of the 63-mile line has been estimated as $3,288,000.

Preliminary work has been done on the 840-mile line to Middletown, Ohio. Aero Exploration Co. has completed an aerial survey of the entire route. Photographing was done from a small plane flying at 2,000 to 3,000 ft. altitude. In addition a 400-mile ground survey has been made. The entire ground survey is to be completed this year. By August the company had acquired 277 miles of right-of-way.

According to present delivery schedules, Texas Gas Transmission expects to have on hand 250 miles of 26-in. pipe in October. In addition to the pipe already delivered for storage along the route, the company has acquired 11,421 tons of steel, equivalent to 54 miles of pipe, which will be used for pipe fabrication for the project at the plant of A. O. Smith Corp.

The 840-mile project will include 114 miles of 20-in. and 726 miles of 26-in. for the system to extend from the Carthage gas field, Panola County, Tex., to Texas Eastern Transmission Corp. compressor station near Middletown, Ohio.

FPC Permit Pending

On September 27, a hearing started before the Federal Power Commission in regard to the 840-mile Texas-Ohio line. As soon as a permit is granted, Texas Gas Transmission expects to be ready to start construction for a program aimed at commencing deliveries by December 1949. Full contract deliveries are to be made by the spring of 1950. This proposed system will bring additional gas supplies which would be available to the company's existing Memphis and Kentucky divisions as well as to other utility companies serving areas of Kentucky, Ohio, and Pennsylvania.

In addition to the trunk line, Texas Gas Transmission plans to lay a 32-mile, 12-in. lateral from the 26-in. main line at Madisonville, Ky., to the existing pipe lines of the Kentucky division near Evansville, Ind., which will transmit to growing markets in the Evansville and Vincennes, Ind., areas.

Construction and design of the pipe lines already mentioned plus compressor stations with a total of 68,000 hp. is being supervised by Stone & Webster Engineering Corp., through contract arrangements made May 4.

Compressor-station installations include the following: Lulu, Miss., 1,200 hp.; Benoit, Miss., 1,200 hp.; Wilmot, Ark., 1,000 hp. These have been approved by FPC.

Texas Gas Transmission has contracts with 41 producers and suppliers. Under terms of a 20-year contract Texas Gas Transmission will purchase from Texas Eastern Transmission Corp., 200,000,000 cu. ft. daily deliverable at Lisbon, La. Additional contracts call for purchase of 165,000,000 cu. ft. daily from various producers in Carthage field, Texas. Sales contracts have been negotiated with subsidiaries of Consolidated Natural Gas Co., Columbia Gas system, and Texas Eastern for delivery of 235,000,000 cu. ft. daily.

Estimated cost of the company's new system and necessary additions to existing facilities is $73,500,000.

Kuwait Oil Co. Lays 600-Mile Line in Kuwait

Kuwait Oil Co., a British firm jointly owned by Anglo-Iranian Oil Co. (British) and Gulf Exploration Co. (American), is laying 600 miles of pipe between 4 and 30-in. diameter in Kuwait, an independent sheikdom north of the northeastern corner of Saudi Arabia. The 600-mile project together with other work has been contracted by Bechtel interests.

At Burgan, Kuwait, the construction organization has built pump stations and gathering-line facilities. At Fahaheel warehouse and shops have been established. An important feature of the project is the construction

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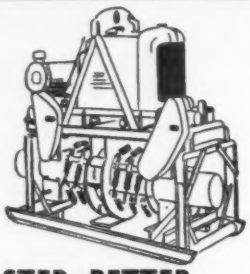

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A loading-line project has been completed at Fahaheel having three sets of two lines each. The lines, 12¾-in. diameter, were launched on six consecutive days and were towed by a tanker going seaward. Each of the lines is approximately 1 mile long. Welding and doping was done on the shore.

Texas Pipe Line Reconditions Line in Port Arthur Area

Work started recently on taking up and reconditioning 140 miles of 6, 8, and 10-in. pipe line for Texas Pipe Line Co. The work has been contracted by Latex Construction Co., which has established field headquarters at Liberty, Tex. The pipe being handled is between Humble and Port Arthur, Tex. For the contractor's operation, H. L. Leake is in charge of takeups, with Sam Harrison in charge of office work. H. E. Murphy is in charge of the rack with E. L. Peterson attending to office work connected with it.

Latex is building several other projects for Texas Pipe Line Co. Construction of tank-farm piping and manifolds for the company's East Houston tank farm has been finished except for a few details. This was handled for Latex by H. E. Murphy with A. E. Stremel office manager.

At West Columbia, Tex., Latex recently started construction of tank-farm piping, pump station, and manifolds for Texas Pipe Line under supervision of J. B. Latham with W. E. Bayles, office manager. At Port Neches and Port Arthur, Latex is completing tank-farm piping and manifolds. J. A. Cantrell is superintendent and J. B. Stoddard, office manager.

Operations recently got under way for laying 60 miles of 16-in. line from East Houston to West Columbia. Present contractor headquarters are at Houston for F. A. Silar, superintendent, and W. A. Briley, assistant superintendent.

Humble Stops Tank-Car Shipments From McCamey

Discontinuation of rail shipments of their crude oil from McCamey, Tex., was announced by Humble Oil & Gas Refining Co. The oil which had been moved by Santa Fe tank cars will, in the future, be moved to the southeast and northeast by pipe line.

Shell Oil Co., and The Texas Co. had already discontinued their use of tank cars from McCamey. Shipments at one time had run as high as 200 tanks cars per day from the McCamey loading rack.

Completion of the Basin pipe line system from Jal, N. M. to Wichita Falls, Tex., accounts for the switch. Some shipments are still being made by rail from this area and the rack will be kept intact for future use.

WAA Seeks Bids on Texas Pipe Line

War Assets Administration is calling for bids on 45 miles of pipe line in the Pampa-Borger area of the Texas Panhandle. The line is now government owned and has been declared surplus property. It consists of 32 miles of 22-in. line, 12 miles of 12-in., and about a mile of 6 and 8-in. pipe.

The line has a maximum capacity of 214,000,000 cu. ft. of natural gas daily. Its installation cost the Government approximately $765,000 to construct.

Sale will be subject to lease for continued use held by Phillips Petroleum Co. which expires September 1, 1951.

Lone Star Gas Co. To Start New Gas Line To Paris, Tex.

Right-of-way purchase has already begun and construction will start next month on 40 miles of 10-in. gas-transmission line by Lone Star Gas Co., Dallas, to increase service to northeast Texas.

The project will be completed in about 4 months at a cost of $606,000. The line with a capacity of 20,000,000 cu. ft. daily will extend from the company's Cush station east of Sulphur Springs, Tex., across Delta County to a point west of Paris, Tex., where it will connect with existing facilities.

Interstate Oil Lays First 16-In. Loop in Miss.-La. Area

The first 16-in. pipe for Interstate Oil Pipe Line Co. will be laid in a 16-mile loop along a section of the company's Liberty, Miss.-Baton Rouge, La., trunk line. This looping project has been contracted by Latex Construction Co., which began clearing right-of-way early this week.

In connection with efforts to increase outlets from the rapidly growing Brookhaven, Miss., area, Interstate Oil Pipe Line is laying 5 miles of 8-in. to loop 11 miles of 6-in. trunk line between Brookhaven and the company's Mallalieu station which is a junction point on the Gwinville-Liberty line.

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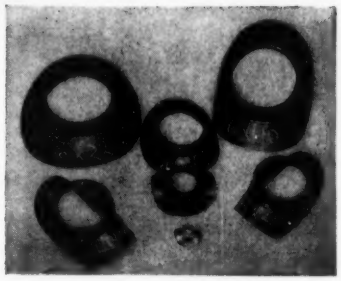

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Drilling Contractors

Binning Assistant Manager Of General Petroleums

General Petroleums, Ltd., drilling contractors of Calgary, Alta., has engaged Ralph L. Binning as assistant manager. He formerly was with Noble Drilling Corp. and its Canadian subsidiary, Dominion Drilling Co., Ltd. Binning began work in the oil industry in 1923 with Prairie Oil & Gas Co. in the production department, and worked in both Salt Creek Oil field at Midwest, Wyo., and Lost Soldier field at Bairoil, Wyo. He attended Oklahoma University and Iowa State College during the years 1929-1931, majoring in chemical technology. He began work in the rotary drilling field in 1931 with Noble in the Rocky Mountain area, and in 1932 was transferred to Rocky Mountain Drilling Co., a newly formed subsidiary of the former company.

In 1937 he was transferred back to the parent company, and continued working in the Rocky Mountain area until 1940. At that time he was transferred by the company to Calgary, Alt., where he assumed management of Dominion Drilling Co., Ltd., and continued with that company through 1943, supervising the drilling of wells in the Princess area, at Cereal and Ross Lake. Operations were discontinued in Alberta in 1943, and he was transferred to the home office of Noble at Tulsa, where he has since been stationed until joining General Petroleums.

Pegg Brothers of San Antonio, have contract to drill H. F. Burkhart et al 1 G. R. Bible, wildcat test in the Francis Berry Survey, Caldwell County, Texas. Test is 4 miles southwest of Lockhart and will be drilled to 1,800 ft.

R. T. Adams Drilling Co., Tallahassee, Fla., has contract for a 6,000-ft. wildcat in southwestern Wise County, North Texas. The exploration will be J. M. Hickey & Sons, Texzona Oil Co., of Fort Worth, and Howard M. Baron, New York, 1 A. Birdwell, located 330 ft. from south and east lines of a 271-acre tract in the Benjamin Jones Survey, 5 miles southwest of the town of Boyd. Hickey is said to have some 15,000 acres blocked, extending from Eagle Mountain Lake northwest almost to Paradise. The strip is about 12 miles in length and varying in width from ½ to 3½ miles.

Jack Grace Drilling Co. was moving in material for a 7,800-ft. wildcat northeast of Childress, in Childress County, Texas Panhandle, for Placid Oil Co. Location is CNW of Section 496, Block H, on land owned by Kermit Waters. J. O. Gray and J. J. McShahan, Wichita Falls, will be tool pusher and truck pusher, respectively.

Noble Drilling Co. is preparing to spud The California Co. 1 Louisiana State Lease 822, in the West Delta area of Plaquemines Parish, Louisiana. This test is in Block 34, 10 miles south of the nearest point of the shore line, and is contracted to drill to 12,500 ft.

Permian Drilling Corp., Odessa, Tex., was moving in equipment for Southern Minerals Corp. 1 G. M. Newsom, 5,600-ft. rotary wildcat in southeastern Terry County, West Texas. Location is 660 ft. from north and 1,980 ft. from east lines of Section 47, Block T, D&W Survey, 5½ miles southeast of Brownfield and ½ mile south of the Brownfield Country Club.

Charles H. Withers of Lloydminster, Alta., has the contract to drill for gas for a St. Paul, Alberta, syndicate, headed by Dr. Ross, which will drill on acreage close to the town. It is planned to secure a franchise for St. Paul.

Western Drilling Co., Longview, Tex., had pits dug and was moving in rotary equipment for an Ellenburger wildcat 4 miles west of San Angelo, Tom Green County, Texas. The prospector is J. J. Perkins, Wichita Falls, and others' 1 Claude Linthicum, SW SW Section 1, AB&M Survey. Contract depth is 7,000 ft. Sun Oil Co. is reported to hold a half interest in the well and in the block of approximately 12,000 acres on which it is located. The area has been worked with seismograph and core drill.

M. J. Delaney Co. Dallas

H. R. DELANEY

M. J. Delaney Co. was formed in 1929 when it took over the assets of Alamo Drilling Co. and Belmont Drilling Co., both operating in West Texas and New Mexico. M. J. Delaney, now deceased, had years of drilling experence prior to acquiring the two companies. The present organization is operated by three men: H. R. Delaney, D. E. Kervin, and W. D. McBee, all of long experience in drilling. These men are not designated by position titles, simply referring to themselves as partners in the business of contract drilling. They keep 14 rigs running in the Permian basin and the East Texas fields.

Equipment.—The 14 strings of tools are about evenly divided, geographically. In West Texas there are five power rigs, of which two are heavy-duty; and two steam-powered, both for deep drilling. In East Texas four rigs are heavy-duty steam, and three are heavy-duty power rigs.

Personnel.—In the Dallas office, W. L. McClusky is office manager; E. F. Cesinger is engineer and geologist. C. J. George, Odessa, Tex., is production superintendent. Harry Jewell, Odessa, is drilling superintendent of the Permian basin. Roy Connally, Tyler, Tex., is drilling superintendent of the East Texas basin.

West Texas tool pushers are: W. E. Smith, Fort Stockton; Claude Dillon, San Angelo; J. N. Webster, Seminole, Tex., and Cecil Watson, Hobbs, N. M. East Texas tool pushers are: L. O. Ward, Athens; J. L. Litton, Carthage, and E. G. Allison, Tyler.

Sidelights.—M. J. Delaney Co. has production from approximately 34 wells in Ector County, and some production in Eastern Texas. To facilitate operations on opposite sides of the state, the company uses a twin-engine Cessna, piloted by Cy Perkins. The three partners have been active in affairs of the American Association of Oilwell Drilling Contractors. McBee has been one of the association's directors since it was established, until this year when he stepped down so that Delaney could have a turn at it. McClosky is chairman of A.A.O.D.C.'s accounting committee.

Penrod Drilling Co. has contract to drill 1 J. B. Morris et al, 13-2s-8w, Vernon Parish, Louisiana, for Placid Oil Co. Contract depth is 8,500 ft.

Bradham Drilling Co. was rigging up at Hunt Oil Co. 1 R. F. Harwell, SE NE 8-17n-19w, in the Village field of Columbia County, Arkansas.

Loffland Brothers Drilling Co. has been awarded the contract to drill The California Co. 1 State Lease 344, an 11,000-ft. wildcat test in Grand Lake of Cameron Parish, Louisiana.

Spartan Drilling Co. will drill a joint test with G. H. Vaughn northwest of Bellevue in Clay County, North Texas. The 6,000-ft. wildcat will be the A-1 Hapgood, Brooks & Burleson Survey, A-786.

Penrod Drilling Co. of Dallas is moving in materials to drill H. L. Hunt 2 J. A. Airey Estate, a wildcat in Section 30-1n-4e, in the Lake Pearl area of Avoyelles Parish, Louisiana.

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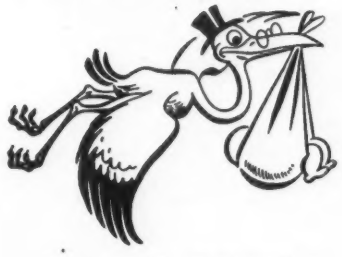

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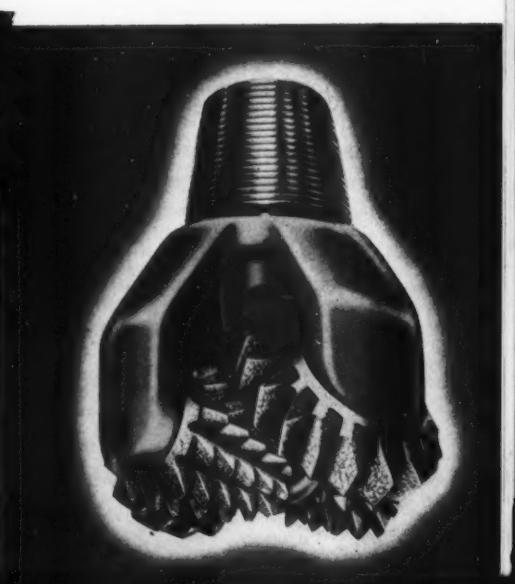

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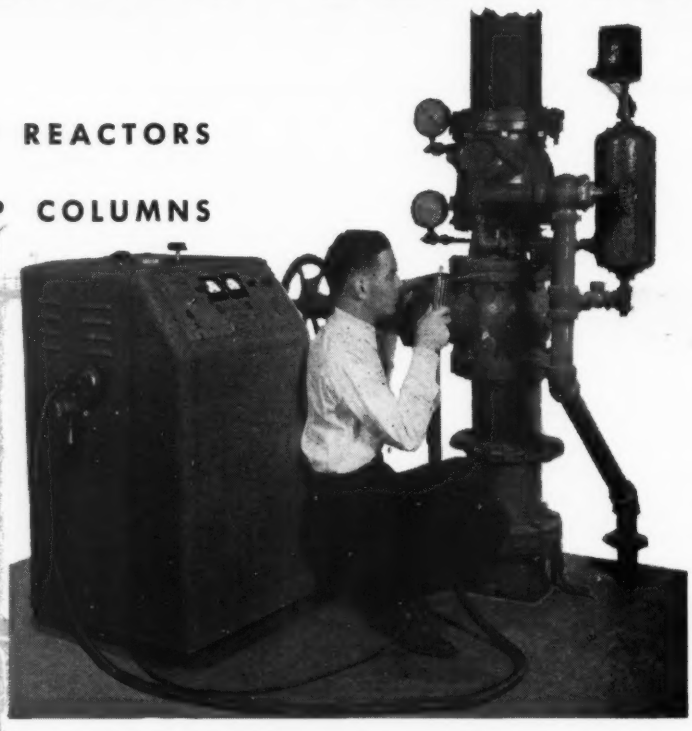

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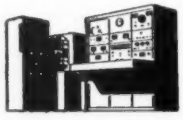

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NATURAL GAS

Oil Used in Generators Saves for Eastern Light Co.

WASHINGTON.—Utilization of a low-grade oil instead of water in generators has enabled the Cambridge (Mass.) Gas Light Co. to increase its distribution capacity by 80 per cent and has doubled the heat content of the gas, it was reported this week.

Developed after 4 years of intensive research, the new method was put into operation at a cost, including changeover of some plant equipment and adjustments on consumer appliances, of $600,000, as against an expenditure of $3,700,000 estimated necessary for the installation of additional water equipment and changes in the distribution system to meet growing demand. Using limited amounts of critically short materials, the new method permitted an increase in production which would have been impossible otherwise because of the shortage of steel pipe, company officials said.

The cost of the oil gas is around 68.9 cents per M.c.f., compared with 53.3 cents for water-gas, but it is believed that additional research will result in narrowing the margin through the use of a cheaper oil while the present differential in cost is more than compensated for by the $3,100,000 saved by the new method of expanding production. The change in the method of production also resulted in a rise in the B.t.u. content of the gas from 528 to 960.

Oklahoma Unitization Laws Boon to Owners, Producers

WASHINGTON.—Unit operation of high gas-oil-ratio oil fields is paying off for Oklahoma royalty owners and producers, and its success is likely to encourage other producing states to enact compulsory unitization laws similar to that of Oklahoma, the Independent Natural Gas Association of America said this week.

A year ago, the association reported, approximately 300,000 M.c.f. of casing-head gas was estimated to have been vented every day from two high gas-oil-ratio pools in Oklahoma, including the four-county West Edmond Hunton lime pool, which accounted for more than half of the waste. This represented a heavy day-to-day loss in money as well as a dissipation of reservoir energy which threatened early depletion of the pool. As a result of unitization, gas venting at West Edmond has virtually ceased while oil production is steadily increasing. The West Edmond Unit became effective October 1, 1947, and was the first field to be unitized by statute.

Conservation officials and production engineers agree that the effectiveness of the statute has been demonstrated, and plans are under way to apply it to other areas where high gas-oil ratios are held to be uncontrolled, the association said.

Natural Gas Use, Revenue Show Marked Increase

Due largely to the changeover of a number of manufactured-gas companies and companies selling mixed gas to the distribution of natural gas, both revenue and cubic footage of natural gas distributors has shown a remarkable rise during the second quarter of 1948 according to the quarterly report of American Gas Association.

Natural gas sales advanced 9.6 per cent in the quarter, rising from 596,000,000 M.c.f. to 654,000,000 M.c.f. The dollar revenue of $221,000,000 reflects a gain of 11.9 per cent over the same quarter of 1947.

Natural gas customers of utility companies totaled 11,300,000 at the end of the second quarter, representing a gain of 15.8 per cent over the like quarter of 1947.

During this period sales of manufactured gas declined 1.5 per cent although, due to increased rates, their revenue showed a gain of 8.5 per cent. The number of customers served also showed a decline of 2.5 per cent.

For the 12 months ended June 30, 1948, total sales of natural gas by utilities were about 2,666,000,000 M.c.f., an increase of 11.6 per cent and revenues were $920,000,000, an increase of 15.5 per cent.

July Gas Sales Show 4.4 Per Cent Gain Over 1947

Utility sales of natural gas totaled 173,700,000,000 cu. ft. in July, an increase of 4.4 per cent compared with July a year ago. The July index of natural-gas utility sales of the American Gas Association stood at 216.4, with sales during the 1935-39 period considered 100.

During the 12-month period ending July 31 total utility sales of natural gas showed a rise of 11.3 per cent compared with the previous 12-month period. Manufactured gas sales showed a gain of 3.8 per cent during the same period, while mixed-gas sales dropped 17.8 per cent.

Coal and Railroad Groups Appeal FPC Gas Decision

National Coal Association and others who opposed the request of the Transcontinental Gas Pipe Line Co. for authority to build a pipe line to the New York area from the Rio Grande, have appealed the Federal Power Commission's approval of this project to the U. S. Circuit Court of Appeals for the District of Columbia.

The company would supply New York, northern New Jersey, and Philadelphia with natural gas. The commission gave the company a certificate to build the line May 31.

Besides the coal association, others who joined in the appeal, included the United Mine Workers of America, eastern railroads, the Anthracite Institute, and four operating railway brotherhoods.

Appellants used the same grounds that they stated before the FPC in the certificate case; they contended that the company has no contracts for delivery of the steel, and that certain procedures required under the federal Administrative Procedures Act had been violated.

T.G.T. Gives Fellowship

HOUSTON.—Tennessee Gas Transmission Co. has established a graduate fellowship at Texas A. & M. College according to an announcement by F. C. Bolton, president, and Harold Vance, head of the department of petroleum engineering at the school.

Natural Gasoline

Canadian Propane Plant To Start Operating Soon

The new plant of Western Propane Co. south of Turner Valley, Alberta, will commence production early in October, with initial production around 15,000 gal. daily, to be later increased to 30.000 gal.

The plant will utilize propane gas from the Royalite absorption plant, previously burned in flares. The raw gas will be processed, the major portion being converted into liquid propane, with some returned to formation and the balance used as plant fuel. The product will be marketed in Alberta, Saskatchewan, and British Columbia.

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Exploration and Drilling

Can Shot Holes Be Eliminated in Seismograph Work?

IF good reflection-seismograph records can be obtained from shots set off aboveground, the cost of that type of work can be reduced by an appreciable amount, and perhaps other phases of field work speeded up. Until recently, most geophysicists were more or less reluctantly resigned to acceptance of the fact that shot holes would always be necessary. The problems of the "weathering zone," that surface and near-surface layer of soil and rocks affected by weather, seemed to present too big an obstacle. obstacle.

In recent weeks, however, geophysical circles have been buzzing with reports and rumors that a surface shooting method had been developed, which did away with the necessity of drilling shot holes. Gradually the valid reports have filled in a fairly accurate picture, and the rumors have died.

There is a surface shooting technique which is still partly in the engineering research phase, partly in the field experimental stage. It has an authentic scientific background, is sponsored by a well-known research institution, and has an established, reputable geophysical company handling the engineering phases, and some of the field experimental work.

The original idea is credited to Dr. Thomas C. Poulter, who started the work at Armour Research Institute. At that time it was thought that shaped charges were involved, a subject in which Armour is interested. When it developed that shaped charges were not involved, Dr. Poulter is reported to have transferred his activities to Southwestern Institute of Inventive Research, with Armour's permission. Southwestern, known better among oil men as the Slick interests research outfit, apparently sponsored the work to a very promising stage.

Republic Exploration Co. of Tulsa has been involved in the work in the capacity of engineering-development consultants and assisting in field experiments. It is understood that field experiments have been carried on in the Gulf Coast, several areas in Texas, and parts of Oklahoma. Unofficial reports indicate that after the earliest trials, subsequent field work yielded good reflection records. One report was that in no case were the records any worse than conventional records of the same area, and in most cases they were somewhat better.

It is known that one of the field experiments was carried on in the Edwards plateau area of Texas. Most of the Edwards plateau is considered as either impossible or extremely difficult for reflection work. It is said that records in this area were equal to those of a conventional party shooting the same area at the same time.

Some official light is expected to be thrown on the whole subject in the near future. Dr. Poulter is scheduled to deliver a talk before the Geophysical Society of Tulsa on October 13. He is also scheduled to deliver a talk at the Dallas regional meeting of the Society of Exploration Geophysicists, which will be held November 18 and 19.

It can be safely predicted that both meetings will draw a big attendance. The prevailing opinion among geophysicists is what might be described as open-minded skepticism. Until they know more about the method and the basic principles involved, they find it difficult to see how the "weathering effect" can be overcome.

HIGHLIGHTS OF WEEK'S DEVELOPMENTS

ROCKY MOUNTAIN.—Exploratory activity is expected to increase in the northeastern area of Utah as a result of the first commercial oil discovery in the state at Equity Oil Co.'s 1 Ashley Valley in Unitah County. Phillips Petroleum Co.'s South Cole Creek discovery, Converse County, Wyoming, is flowing at the rate of 346 bbl. of oil per day from perforations in the Lakota. The same company recovered water in the Tensleep in its first deep test of the Rex Lake field, Albany County, Wyoming.

MISSISSIPPI.—Harry W. Elliott 1 Edwin B. Ogden, 42-6n-2w, Adams County, probable new oil discovery, encountered oil sand from 6,409-26 ft., and operators are preparing to test.

TEXAS GULF COAST.—Ohio Oil Co. et al is rigging up for immediate operations on the 1 State of Texas, which is located in Tract 248, 6 miles off the Brazoria County shore line in the Gulf of Mexico, 12½ miles northeast of Freeport and 8 miles south of San Luis Pass.

SOUTH LOUISIANA.—Magnolia Petroleum Co. has recorded another gas-condensate pool 12 miles out in the Gulf of Mexico off the Iberia Parish shore line. It is the 1 State Lease 838, Block 45, Eugene Island area, and flowed at the rate of 10.47 bbl. of 45.4°-gravity condensate daily along with 4,800,000 cu. ft. of gas.

WEST TEXAS.—Woodley Petroleum Co. 1 Alderson, Hockley County wildcat in the undeveloped area between the Smyer and West Smyer fields, indicated discovery production from the Glorietta section of the Permian.

EAST TEXAS.—Gier-Jackson, Inc., 1 Southern Pine Lumber Co., Cherokee County wildcat, had better prospects of production in the Woodbine when salt water encroachment was cut from 90 to 30 per cent. In Smith County, Delta Drilling Co. 1 Rice was installing pump after recovering clean oil on the swab from the Paluxy.

CALIFORNIA.—Barnsdall Oil Co.'s new Guijarral Hills discovery in Fresno County is the state's first Leda sand production, with an estimated open flow potential of 2,000 bbl. daily or more.

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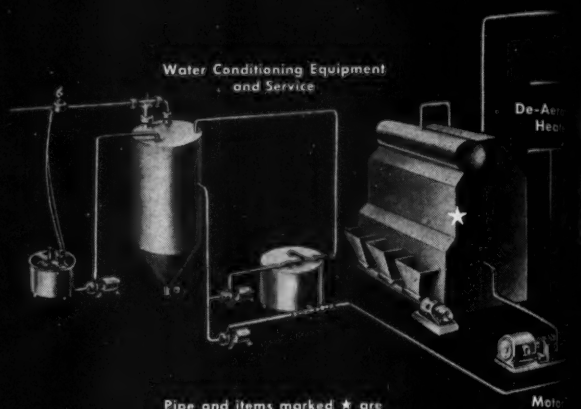

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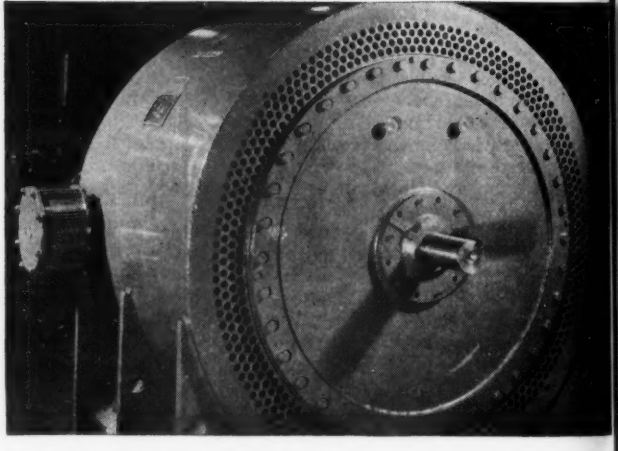

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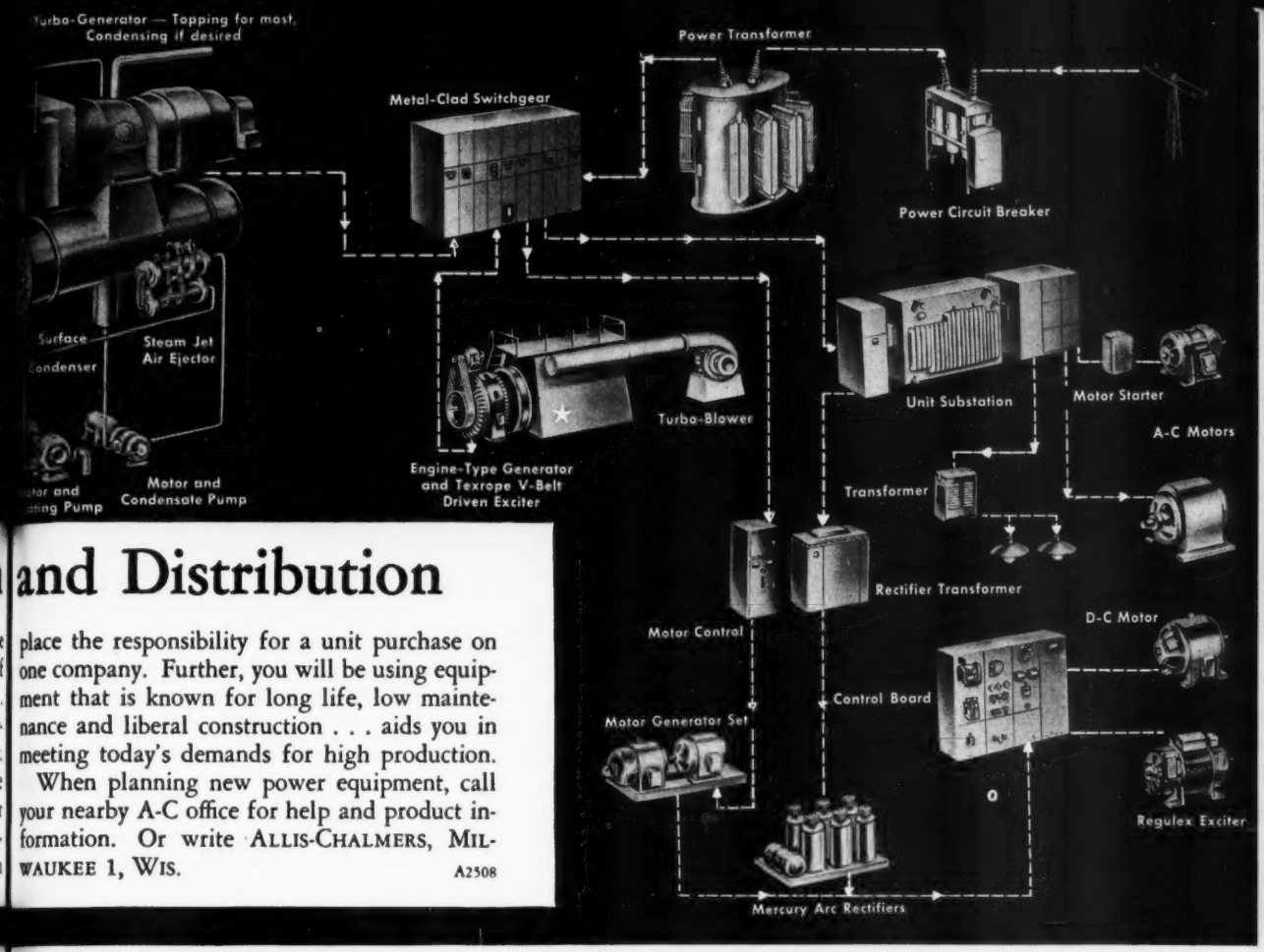

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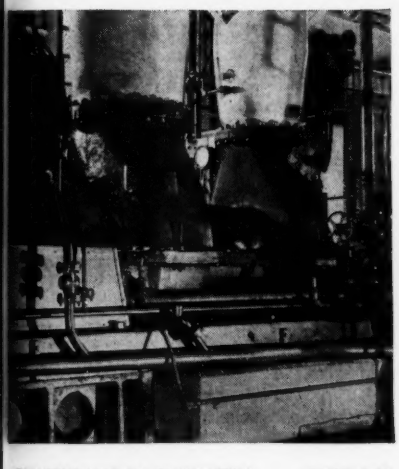

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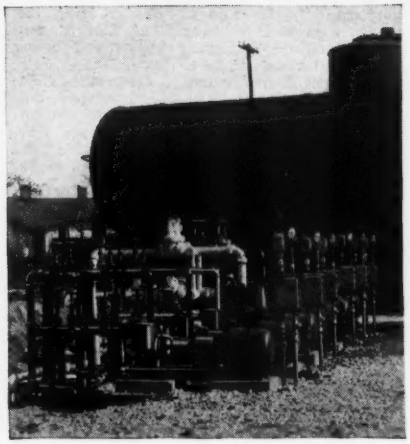

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SOUTHWEST TEXAS

Starr County Gas Pool Opened by La Gloria

CORPUS CHRISTI.—A new gas pool for Starr County, approximately 1 mile west of North Rincon field, has been opened by La Gloria Corp. 1 R. J. Moore. The well gaged at 12,000,000 cu. ft. of gas per day on open flow with 1,300 psi. shut-in. pressure, through perforations at 3,285-99 ft. The well flowed 1,940,000 cu. ft. per day through a ¼-in. choke, with 1,270 psi. tubing pressure. Total depth is 3,400 ft. in new hole, with 4½-in. casing set to 3,340 ft. for the completion. It is a redrill operation in the old Tex-Harvey Oil Co. 1 Moore dry hole, and is in the CCSD&RGNG Survey 513.

In South Kohler gas field area of southwestern Duval County, Humble Oil & Refining Co. 60 V. Kohler gaged 50.81 bbl. of oil per day on the pump, making 19°-gravity oil and 1 per cent basic sediment and water. Total depth is 3,502 ft., and production is through perforations at 1,796-1,802 ft. This new oil discovery is located in J. G. Reynolds Survey 172.

Humble 6 Henry L. Cordz, discovery well of a new deeper gas-condensate pay zone at Flour Bluff field in Nueces County, gaged 1,115,000 cu. ft. of gas with 18 bbl. of condensate per day through a ⅛-in. choke, with 3,100 psi. tubing pressure, casing sealed. Shut-in pressure 3,600 psi. Ratio is 61,900, and gravity of condensate 43.6°. Total depth is 12,786 ft., with perforations for completion at 9,675-90 ft.

Final gage has been reported for discovery well of the Seguin pool in Guadalupe County. Butler Oil Co. 1 Emil Borchers, in A. M. Esnaurigar XI League Grant, 5 miles northwest of Seguin, flowed an initial production of 21 bbl. oil per day on open flow, gravity 12°. Total depth is 1,192 ft., and production is from open hole at 995-1,047 ft. Plugged back total depth is 1,047 ft.

There were 54 new locations reported for Districts 1 and 4, of which 11 are wildcat starts, 2 each in Jim Hogg, Nueces and Webb, and 1 each in Caldwell, Guadalupe, McMullen, Starr, and Zavala counties. Thirteen new locations were reported for Charlotte field in Atascosa County. Three successful exploratory tests were completed, opening two new oil pools, one each in Duval and Guadalupe counties, and one new oil pay in Mercedes field, Hidalgo County. Seven wildcats were dry, two each in Atascosa and Nueces and one each in Jim Wells, La Salle, and Webb counties.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) SUCCESSFUL WILDCATS

Duval County: New oil discovery for El Mesquite field—Cam Corp. C-1 E. J. Rogers et ux, in Share 2, El Mesquite Grant, 250 ft. SW of 3 Olson (gas well), 6 mi. NW of Hebbronville, top pay 3,020 ft., TD 3,044 ft. (open hole 3,018-44 ft.) IP: 6 bbl. oil per day through a 9/64-in. choke, input GOR 162,210, jetting, TP 9 psi., CP 350 psi., gravity 46°, no water.

Guadalupe County: New oil pool "Seguin" Butler Oil Co. 1 Emil Borchers, in A. M. Esnaurigar XI Lge. Grant, 5 mi. NW of Seguin, top pay 1,007 ft., Buda lime, TD 1,192 ft., plugged back TD 1,047 ft., open hole 995-1,047 ft., IP: 21 bbl. oil per day on open flow, no gas, gravity 12°, 10 per cent water.

Hidalgo County: New pay Mercedes field —V. E. Cook, Trustee 1 R. E. Barrow, in Farm Tr. 2349, North Capisaldo Subd., dual completion. Top pay 7,140 ft., perforations 7,140-50 ft., IP: 14,000,000 cu. ft. gas per day on open flow. Top pay 7,038 ft., perforations 7,038-53 ft., IP: 72 bbl. oil per day through 9/64-in. choke, GOR 875, TP 675 psi., gravity 41.9°, no water, TD 8,938 ft.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) WILDCAT FAILURES

Atascosa County: Dillard & Waltermire 1 T. Davies, in L. Rivas Sur. 63, 2½ mi. N of Charlotte, dry, TD 7,235 ft.

Newman Bros. & E. W. Gill 1 Ada Tom, in Edward O'Boyle Sur., Section 7, 2 mi. SE of Campbelton, dry, TD 3,850 ft.

Jim Wells County: H. R. Smith & W. C. McBride, Inc., & Progress Petroleum, Inc., 2 Paula V. de Garcia, in R. J. Kleberg Sur. 102, 7 mi. S of Alice, dry, TD 5,697 ft.

LaSalle County: Newman Bros., Alaska Steamship Co. and Hancock Oil Co. of Calif. 1 Reed & Storey, in H&GN Sur. 140, 4 mi. W of Washburn, dry, TD 5,592 ft.

Nueces County: Fitzpatrick Drilling Co. 1 Carle Howington, in O. M. Oliver Sur. 156, A-961, 1 mi. SE of Shield field, dry, TD 7,760 ft.

Magnolia Pet. Co. 1 Alvin Schubert, Sec. 130, Geo. H. Paul's Subd. of Driscoll Ranch, 3 mi. SE of Driscoll, dry, TD 12,008 ft.

Webb County: Dulaney Oil Co. 1 State of Texas, Sur. 836, 15 mi. SW of Mirando City, dry, TD 2,215 ft.

MISSISSIPPI

Show South of La Grange Field Evokes Interest

JACKSON.—A probable new oil discovery at Harry W. Elliott 1 Edwin B. Ogden, Section 42-6n-2w, Adams County, approximately 2 miles south of production at La Grange field, caused trading in the area to go at a rapid pace. The well checked low on all markers while drilling and no cores were taken. Oil sand was encountered from 6,409-26 ft. This sand is lower in the section than any of the producing horizons in La Grange field. Casing has been cemented on bottom, at 6,500 ft., and operators are squeezing above and below the sand which is to be tested.

In Jeff Davis County, Gwinville field, Hunt Oil Co. 1 J. D. Riley, 11-9n-19w, has been completed flowing 4,203,000 cu. ft. gas plus 26 bbl. of condensate per day, through a ¼-in. choke, tubing pressure 2,817 psi. Total depth is 8,315 ft.

Also in Gwinville field, Hunt 2 J. D. Riley, 7-9n-18w, was completed, flowing 4,290,000 cu. ft. gas plus 25 bbl. of condensate per day through a ¼-in. choke, tubing pressure 2,995 psi. Total depth is 8,280 ft.

In Hub field, Marion County, The California Co.-Stanolind Oil & Gas Co. 1 Harry L. Rankin Unit 1, 29-2n-14e, is showing as an oil producer on initial test. On a 2-hour test using ¼-in. choke the well flowed 60 bbl. of 32.4°-gravity oil with 0.1 per cent cut, through perforations at 9,124-26 ft. Tubing pressure flowing was 1,400 psi., with gas-oil ratio 603. Operators are now testing through a 5/32-in. choke.

Six wildcat starts were reported, one each in Franklin, Greene, Lincoln, Perry, Smith, and Sharkey counties. Development locations were two in Mallalieu field, Lincoln; and one each in Eucutta field, Wayne; Hub field, Marion; Ovett field, Jones; and Yellow Creek field, Wayne counties. Two wildcat failures were reported, one each in Jasper and Lauderdale counties.

MISSISSIPPI WILDCAT FAILURES

Jasper County: Wm. Helis 1 Lee Chancellor, NW NE 20-10n-11w, dry, TD 7,335 ft. Top City Bank sand 5,555 ft., Stanley 5,590 ft., Tuscaloosa 5,950 ft., Massive 7,187 ft., Lower Cretaceous 7,281 ft.

Lauderdale County: C. L. Higgason-Chapman 1 Malone-Thigpen Unit, SW SW SE 2-6n-16e, dry, TD 5,038 ft., top Tuscaloosa 2,835 ft., Marine Tuscaloosa 3,295 ft., Massive 3,722 ft., Lower Cretaceous 3,850 ft.

TEXAS GULF COAST

Condensate Pool Opened by Atlantic in Goliad County

HOUSTON.—A new gas-condensate producing area has been opened 2 miles northeast of Cabeza Creek field and 1 mile north of Poehler field in Goliad County by Atlantic Refining Co. B-1 G. M. & A. Bluntzer. The test was drilled to a depth of 9,015 ft. and gaged 1,150,000 cu. ft. of gas per day on open flow, flowing a spray of 59.1°-gravity water-white condensate with ratio of 60,000. Shut-in pressure is 2,750 psi. Production is through perforations at 7,845-60 ft. The 5½-in. casing was set at 8,033 ft. for the completion.

Southern Minerals Corp. 1 Perryman, wildcat, 5½ miles north of Refugio townsite, and north of Refugio field, west of Greta field, in Refugio County, has been dual-completed as a gas-condensate discovery. Total depth is 7,175 ft., and through perforations at 7,114-17 ft. flowed gas and condensate through a ¼-in. choke, with 2,550 psi. working pressure on tubing and 3,000 psi. shut-in pressure. Through perforations at 6,630-35 ft. the well flowed gas and condensate through a ¼-in. choke with 2,150 psi. working pressure on the casing, and 2,350 psi. shut-in pressure, no estimate of condensate flow. This well is in the J. de la Garza Trudo Survey, A-287.

A new oil field for Wharton County has been opened by Lloyd Smith and McKay Donkin 1 J. C. Allen. Located approximately 1½ miles west of Withers production and approximately 5 miles south-southeast of Pierce townsite, in the Mark Weiss Survey, Section 22. Total depth is 7,306 ft., and for the completion, pipe was perforated from 7,189-91 ft. in the Lower Frio and well made 170 bbl. of 46.1°-gravity oil per day through a 9/64-in. choke. Flowing pressure on the tubing 1,200 psi., and casing pressure 1,500 psi. Ratio was 900. The test showed approximately 3 per cent salt water. The second test, 1 F. T. & L. F. Schumaker, 990 ft. southeast of the discovery well, has been spudded in and surface pipe set. It is located in ETRR Survey, Section 21, and is scheduled to be drilled to 7,300 ft.

Gulf Oil Corp. 1 Mrs. Mary Pierce et al, a gas extension well 3,850 ft. west of Collegeport production, Matagorda County, flowed 4,100,000 cu. ft. of gas daily through a ¼-in. choke, through perforations at 4,094-4,115 ft. Total depth is 4,505 ft.

P. R. Rutherford 6 J. F. Welder Hrs., a new extension well at West Vidauri gas field, in northern Refugio County, gaged 37,500,000 cu. ft. gas per day with a very slight spray of condensate on open flow through perforations at 4,530-41 ft., in a new pay zone for the field. Total depth is 5,119 ft., with 5½-in. casing set to 4,899 ft. This well is located in the Joseph Farley Survey.

The 44 new locations this week for Districts 2 and 3 included 3 wildcat starts, 2 in Jefferson and 1 each in Brazoria, Burleson, Jackson, Madison, Montgomery and Walker counties. Five successful exploratory tests were completed, one each in Calhoun, Goliad, Liberty, Refugio, and Wharton counties. Seven wildcat failures were reported, three in Brazoria and one each in Fort Bend, Jackson, Matagorda, and Wharton counties.

TEXAS GULF COAST (DISTRICTS 2 & 3) SUCCESSFUL WILDCATS

Calhoun County: New gas pay, Matagorda Bay—Salt Dome Oil Corp. 1 State of Texas, Section 95, in State Tr. 95, in Matagorda Bay, ¾ mi. W of oil production at Matagorda Bay field, top pay 4,398 ft., TD 5,000 ft., perf. 4,398-4,426 ft., IP: 12,500,000 cu. ft. gas per day on open flow.

Goliad County: Extension and gas pay, Poehler field—Atlantic Refg. Co. B-7 G. M. & A. Bluntzer, in James Cun-

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ningham Sur., 11 mi. NW of Goliad, approx. 1 mi. N of Poehler field, top pay 7,845 ft., TD 9,015 ft., perf. 7,845-60 ft., IP: 1,150,000 cu. ft. gas per day on open flow, GOR 60,000, shut-in pressure 2,750 psi., gravity 59.1°, no water.

Liberty County: New oil sand South Liberty field—Floyd L. Karsten 4 Leon Mitchell, M. G. White Sur., TD 7,980 ft., top sand 7,533 ft., perf. 7,534-62 ft., IP: 293 bbl. oil per day through 10/64-in. choke, GOR 947, TP 1,400 psi., gravity 35.6°, no water.

Refugio County: New gas pay West Vidauri field—P. R. Rutherford 6 J. F. Welder Heirs, in Joseph Farley Sur., top pay 4,530 ft., TD 5,119 ft., perf. 4,530-41 ft., IP: 37,500,000 cu. ft. gas per day on open flow, very little condensate, shut-in pressure 2,083 psi., no water.

Wharton County: New oil pool—Floyd H. Smith & McKay Donkin 1 J. C. Allen, in Mark Weiss Sur., Sec. 22, 5 mi. S-SE of Pierce townsite, approx. 1½ mi. W of Withers prodn., TD 7,308 ft., top sand 7,188 ft., Lower Frio, perf. 7,189-91 ft., IP: 171 bbl. oil per day through 9/64-in. choke, GOR 900, TP 1,200 psi., CP 1,500 psi., gravity 46°, 3 per cent water.

TEXAS GULF COAST (DISTRICTS 2 & 3) WILDCAT FAILURES

Brazoria County: Cecil Hagen 1 M. O. Howe, Spraggins Sur., SE flank Manvel dome, dry, TD 5,610 ft.

Brazoria County: W. Earle Rowe 1 Selena Phillips, in Wm. Barrett Sur., approx. 2 mi. S of Lochridge, dry, TD 9,021 ft.

Superior Oil Co. 1 C. D. Johns et al, in J. White Sur., 10 mi. NE of Van Vleck, dry, TD 9,903 ft.

Fort Bend County: The Texas Co. 1 Hubert Hausler et al, in Barnabas Wickson Sur., off SW flank of Big Creek dome, TD 5,646 ft.

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Jackson County: John B. Coffee 1 W. B. Williams, Gaines Fig Orchard Subd., of Morris & Cummings Sur. 21, A-238, ½ mi. SW of West Mauritz field, 9 mi. SE of Ganado, dry, TD 5,815 ft.

Matagorda County: Gulf Oil Corp. A-1 L. Letulle, in Ralph Wright Sur. A-407, Collegport area, dry, TD 5,987 ft.

Wharton County: Rycade Oil Corp. 1 J. A. Langdon, ETRR Sur., Sec. 17, A-146, 5 mi. SE of El Campo, dry, TD 7,260 ft.

SOUTH LOUISIANA

New Pool Opened Off Louisiana Gulf Coast

NEW ORLEANS.—Another gas-condensate pool in the Louisiana tidelands area, located 12 miles out in the Gulf of Mexico off the Iberia Parish shore line has been opened by Magnolia Petroleum Co. 1 State Lease 838, Block 45, Eugene Island area. Drilled to a total depth of 13,636 ft., with 7-in. casing cemented at 11,740 ft., completion was made through perforations at 11,351-58 ft., through a ⅜-in. choke, flowing at the rate of 10.47 bbl. of 45.4°-gravity condensate daily along with 4,800,000 cu. ft. of gas per day. Flowing pressure on tubing was 1,500 psi.

A new deep sand for North Gordon pool has been opened by Barnsdall Oil Co. 3 Edgewood, 13-6s-10w, in Beauregard Parish. Well was completed through perforations at 8,826-36 ft., flowing at the rate of 103 bbl. of 47.6°-gravity oil per day, tubing pressure 500 psi.

Union Producing Co. A-1 LaTerre-State Unit, potential gas discovery, in the Bay Baptiste area of Terrebonne Parish, 42-19s-19e, flowed an ungaged amount of gas on test through perforations at 10,503-11 ft. Well has been shut in awaiting surface equipment. Total depth 11,997 ft., with 7-in. set at 11,110 ft.

Sohio Petroleum Co. 1 Hayes-Leckler-Moody Unit, extended gas production at Iota field in Acadia Parish. Located in 13-8s-2w, total depth is 9,525 ft. with 5½-in. production string set at 9,315 ft., and perforations at 9,220-26 ft. Well flowed dry gas but was shut in with no gage taken.

Two successful exploratory tests opened new production in Calcasieu Parish, Bell City area, and a new oil sand in Block 32, offshore of Terrebonne Parish. Two wildcats were dry, one each in St. Mary and Terrebonne parishes. There were 22 new locations reported this week with 3 being wildcat starts, 1 each in Avoyelles, Cameron, and Terrebonne parishes.

SOUTH LOUISIANA SUCCESSFUL WILDCATS

Calcasieu Parish: Gas-condensate discovery, Bell City area—Sohio Petroleum Co. 1-E Sweet Lake Land & Oil Co., 29-10s-6w, ½ mi. NE of 1-B Sweet Lake Land discovery well and the Bell City discovery area, TD 10,774 ft., top sand 10,712 ft., perf. 10,712-35 ft., IP: 16 bbl. condensate per day and 4,000,000 cu. ft. gas per day through ¼-in. choke, GOR 250,000, TP 3,400 psi., gravity 47.7°, no water.

Terrebonne Parish: New oil sand, Block 32 Kerr-McGee Oil Ind., Inc., 3 State-Block 32, Lease 754, (directional well from State 1 Block 32 platform) in Gulf of Mexico, TD 3,398 ft., top sand 1,758 ft., perf. 1,758-74 ft., IP: 750 bbl. oil per day through ½-in. choke, GOR 75, TP 150 psi., gravity 25.6°. No water.

SOUTH LOUISIANA WILDCAT FAILURES

St. Mary Parish: Sparta Oil Co. 2 W. Prescott Foster Est., 13-15s-10e, in Franklin townsite area, dry, TD 11,516 ft.

Terrebonne Parish: The Texas Co. D-1 State Lease 649-Point Au Fer, in 35-20s-12e, 5 mi. E of Point Au Fer prodn., dry, TD 14,251 ft.

N. CENTRAL TEXAS

Chico Field Extended By Cities Service Well

WICHITA FALLS.—A calculated daily potential of 900 bbl. of oil, through ½-in. choke, was reported for Cities Service Oil Co. 2 Sealy, Block 3, GH&H Survey, extending production two locations west and one location south in Chico field of Wise County. Perforations were made from 5,327-75 ft. in the conglomerate.

Standard-Fryer Drilling Co. 1 Morris, W. Bohn Survey, southeast outpost to the western Chico area, was having trouble with high gas-oil ratio. After a two-stage treatment of 1,000 and 2,000 gal. in the conglomerate from 5,195-5,247 ft., open hole, production dropped from 10 to 6 bbl. of oil an hour. Gas-oil ratio was still near 6,000 cu. ft. North and west of Chico, Moran Bros. I Craft was drilling below 5,491 ft. Two miles southeast of the Moran wildcat, Big Bear Oil Co. 1 Hunt, N. Mackey Survey, was drilling below 4,382 ft. On the southeast corner of the western part of the field, Cities Service 1-B Berry cored 19 ft. of sand and shale from 5,371-90 ft. It drilled ahead to 5,465 ft. and was circulating.

Warren Oil Corp. 1 Davis, 8 miles southwest of Throckmorton, perforated casing with 6 jet-gun shots per foot from 4,721-30 ft. and was preparing to test. In south-central Throckmorton County, Grisham-Hunter Corp. 1 W. A. Morrison was drilling below 3,490 ft. in Strawn limestone. The same company's 4 R. W. Kelly, 9 miles southwest of Throckmorton, was below 3,480 ft. in shale. Woodley Petroleum and Danciger Oil & Refining Co. 1 Welch, southwest outpost to Odell field, topped the Caddo at 3,618 ft. and drilled limestone showing oil from 3,918-32 ft. A 2-hour drill-stem test at that interval recovered 50 ft. of oil and gas-cut drilling mud. Bottom-hole flowing pressure was 300 psi. A second test of oil shows from 4,000-12 ft., with tool open 2 hours, recovered another 50 ft. of oil-cut mud. Operators continued below 4,015 ft. Woodley Petroleum 1 Spain, Block 967, TE&L Survey, southwest outpost to Strawn sand production in Manning-Parrott field, cored 2 ft. of sand with oil shows from 2,546-51 ft.

New oil production 11 miles north of Breckenridge in Stephens County was in prospect at Texas Pacific Coal & Oil Co. 2-B TXL, Section 7, Block 5, SP Survey. The well had top of the Mississippi at 4,270 ft., and drilled 285 ft. of porous limestone. However, only 10 ft. was perforated, from 4,282-92 ft., according to last report, which produced an average flow of 44 bbl. of oil hourly, natural, through ½-in. choke. Total depth was 4,675 ft. There was water in the Ellenburger from 4,580 ft. to total depth. Top of the Mississippian was placed 101 ft. high, structurally, with the same company's 1-B TXL, 1½ miles to the east, which produced from the Caddo and Mississippi, but was completed for 536 bbl. of oil from the Caddo only. The Caddo was dry in the 2-B TXL. Texas Pacific was preparing location for a 990-ft. east offset to the 1-B TXL, as the 1 S. P. Robertson.

In southwestern Stephens County, new Ellenburger production was indicated at E. H. R. Sabens 1-A Ross Elliott, Section 55, Block 7, T&P Survey. The well unloaded an estimated 2,000 ft. of clean oil while pulling drill pipe after running a 45-minute drill-stem test from top of the Ellenburger at 3,992 ft. to total depth at 4,094 ft. Gas came to the surface in 5 minutes. Electrical surveys were to be made and casing set near bottom for completion. It also had indicated production from the Strawn and Caddo.

In the new area 2 miles northeast of Anson in Jones County, Carl Robinson 2-A J. H. Scott, southwest offset to the Canyon sand discovery, was believed to have found a second and lower producing strata in the Pennsylvanian, 25 ft. lower than the first well. Top of saturation was logged at 3,624 ft. A 2-hour drill-stem test from 3,624-45 ft., total depth, brought gas to the surface in 20 minutes and recovered 325 ft. of oil and 90 ft. of oil-cut mud. Casing was set on top of the section.

NORTH CENTRAL TEXAS (DISTRICTS 9 & 7-B) SUCCESSFUL WILDCATS

Archer County: G. J. School 1 B. C. Andrews, G. Gholson Sur., 4 mi. SE Anarene, pumped 55 bbl. oil a day, Caddo 4,547 ft., TD 4,665 ft.

Coleman County: Jack A. Rhodes 1 Mary L. Delleny, Sec. 25, BBB&C Sur., 5 mi. NW Coleman, pumped 41 bbl. 40°-gravity oil a day, Gardner sand 2,894-2,916 ft., TD 3,036 ft., PB 2,936 ft., elev. 1,873 ft.

Jones County: Carl Robinson 1 J. H. Scott "A," Sec. 14, O.A.L. Sur., 2 mi. NE Anson, flowed 164 bbl. 42°-gravity oil in 20 hours, ¼-in. choke, Canyon 3,592-3,606 ft., TD 3,608 ft., tubing pressure 50 psi., GOR 350 cu. ft., elev. 1,656 ft.

Stephens County: Warren Oil Corp. 1 Claud McCauley, Sec. 18, Blk. 6, T&P Sur., 2 mi. NW Frankell, flowed 195,000 cu. ft. gas, Marble Falls 3,954-4,030 ft., TD, SIP 1,750 psi.

Throckmorton County: Grisham Hunter Oil Corp. 5 R. A. Brown, Sec. 1,613, TE&L Sur., 9 mi. S Throckmorton, flowed 95 bbl. 43°-gravity oil a day, Mississippi 4,646-74 ft., TD ¾-in. choke, tubing pressure 420 psi.

Young County: The Allar Co. 1 Harrison Heirs, J. Saunders Sur., 4½ mi. SE Murray, pumped 82½ bbl. 38°-gravity oil a day, sand 2,635-43 ft., TD 2,645 ft.

NORTH CENTRAL TEXAS (DISTRICTS 9 & 7-B) WILDCAT FAILURES

Archer County: Carl Childs 2 C. E. Carter, Lot 21, Blk. 5, Clark & Plumb Sur., 5

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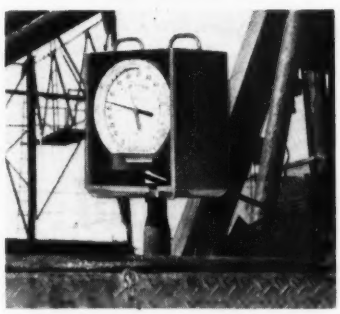

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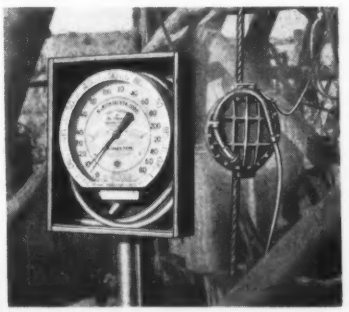

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mi. SE Archer City, dry, TD 1,187 ft., Gunsight 1,085 ft.

Timberlake & Scott 1 G. & A. Parish, W. Sellers Sur., 8 mi. SE Mankins, dry, TD 1,803 ft. in sand.

Callahan County: Fain & McGaha et al 1 Russell Hart, Sec. 59, BOH Sur., 11 mi. NE Baird, dry, TD 4,412 ft., sand with show dead oil 538-540 ft., Barnett shale 4,050 ft., Ellenburger 4,170 ft., dolomite 4,215 ft.

Clay County: Homer Holyfield 1 F. D. Groves, Blk. 104, Byers Bros. Subd., 3 mi. SW Byers, dry, TD 1,319 ft. in sand.

Frank Wood 1 Mrs. J. W. Maddox, T. M. Hughes Sur., 7½ mi. NW Ringgold, dry, TD 5,627 ft., Canyon 2,140 ft., Caddo 5,476 ft., Ellenburger 5,540 ft.

Coleman County: W. B. Johnson Drilling Co. 1 G. T. Sloan, Sec. 33, D&DA Sur., 3 mi. SW Gorman, dry, TD 2,769 ft.

Cooke County: Russell Maguire 1 J. W. Fleetman, Blk. 7, John Barnett Sur., 2 mi. N Myra, dry, TD 1,710 ft.

Sussex Oil Co. 1 T. G. Moss, SA&MG Sur., 1½ mi. E Lea, dry, TD 2,418 ft.

Sussex Oil Co. 1 M. W. Thomason, T. Bell Sur., 2 mi. SE Lea, dry, TD 1,432 ft.

Foard County: Phillips Petroleum Co. 1 W. A. Walker, Sec. 26, Blk. 8, H&TC Sur., 5 mi. NE Thalia, dry, TD 4,566 ft., Strawn 4,264 ft., DST 4,264-80 ft., open 90 minutes, recovered 7 ft. gas-cut mud, DST 4,264-90 ft., recovered 12 ft. oil-cut mud, pre-Cambrian 4,525 ft.

Haskell County: British American Producing Co. 1 Heber Stone, Sec. 14, James F. White Sur., 15 mi. SE Haskell, dry, TD 5,375 ft., Caddo 4,820 ft., Mississippi 5,205 ft., elev. 1,492 ft.

Jones County: J. K. Hughes Oil Co. 1 W. L. Alford, Sec. 47, Blk. 2, SP Sur., 6 mi. W Anson, dry, TD 3,236 ft., Gunsight lime 3,087 ft., King sand 3,152 ft.

Ungren & Frazier 1 W. W. Ivey, Austin & Williams Sur., 3 mi. E Hamlin, dry, TD 3,339 ft., King sand 3,206-29 ft.

Ungren & Frazier 1 T. Parkington, Sec. 36, Blk. 2, SP Sur., 12 mi. SW Anson, dry, TD 3,310 ft., Saddle Creek 2,655 ft., Flippen 2,740 ft.

West Central Drilling Co. 1 Mrs. F. J. Phillips, League 334, Harrison CSL, 10 mi. W Anson, dry, TD 3,252 ft., Flippen 2,794 ft., Swastika 3,220 ft.

Shackelford County: M. J. Mitchell 1 W. H. Green, Sec. 34, BAL Sur., 4½ mi. SE Albany, dry, TD 4,660 ft., Caddo 3,878 ft., Mississippi 4,504 ft.

Stephens County: Ryan, Hays & Burke 1 Ben Whiteside, Sec. 9, Blk. 7, T&P Sur., 7 mi. S Breckenridge, dry, TD 3,910 ft., Ranger sand 3,867 ft., Barnett shale 4,011 ft., Ellenburger 4,199 ft.

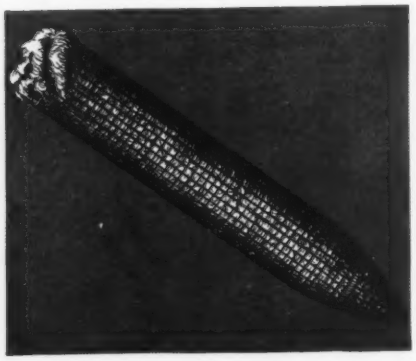
Stonewall County: W. H. Bryant & S. B. Roberts 1 Ima Harrison, Sec. 294, Blk. D, H&TC Sur., 6 mi. N Peacock, dry, TD 5,307 ft., Rees lime 5,267 ft., elev. 1,824 ft.

Throckmorton County: Bridwell Oil Co. 1 O. L. Kunkel, SPRR Sur., 9½ mi. W Woodson, dry, TD 825 ft. in shale.

Wichita County: Fortex Oil Corp. 1 Arnold Holtzen, Sec. 8, Morris May Sur., 4 mi. W Burkburnett, dry, TD 1,900 ft.

W. H. Hammon 2 G. M. Thaxton, Blk. 40, Cherokee CSL, 5 mi. SE Wichita Falls, dry, TD 5,852 ft.

Frank Wood 1 Ed Forster "A," S. Dennison Sur., 4 mi. W Clara, dry, TD 2,105 ft.



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APPALACHIAN FIELD

Preston County Wildcat Strikes Gas, Drills Ahead

PITTSBURGH.—In Portland district, Preston County, West Virginia, Hope Natural Gas Co. 9,208 J. Paul Martin, elevation 1,934 ft., topped the Oriskany sand at 5,409 ft., striking gas pay at 5,411 ft., where it gaged 4,600,000 cu. ft., with drilling still in progress. This wildcat is located on the Kingwood Quadrangle, 5.3 miles south of Latitude 39 degrees, 30 minutes, 3.9 miles west of Longitude 79 degrees, 30 minutes, and approximately 3,500 ft. southwest of the Lewis well drilled by Snee & Eberly, a successful wildcat producer in the Onondaga chert. In this same section, approximately 1,100 ft. east, Wm. E. Snee 1 Virginia Cuppett, elevation 2,137 ft., deep wildcat, is drilling at 8,840 ft.

In Glade district, Webster County, Hope Natural Gas Co. 9,227 West Virginia & Pittsburgh Railroad Co., elevation 2,521 ft., logged the Berea sand at 1,764-1,806 ft. and is continuing drilling.

In Lincoln district, Wayne County, United Fuel Gas Co. 6,181 F. D. Caldwell, elevation 688 ft., is drilling at 7,365 ft. in the Knox dolomite with a show of gas at 7,351 ft., testing 26,000 cu. ft.

In Steele district, Wood County, Godfrey L. Cabot, Inc., is rigging up to drill the 1,282 Jacob Gates, elevation 1,035 ft. This well is in the area of the Waterbury discovery well which was brought in several months ago in Grant district, Jackson County.

In Wayne Township, Erie County, Pennsylvania, Pennsylvania Gas Co. 1 A. D. Peterson, elevation 1,862 ft., logged the Tully at 2,970-3,060 ft., Onondaga at 3,222-3,435 ft. and was drilling at 3,502 ft.

In Georges Township, Fayette County, Orville Eberly et al 1 John Dulick, elevation 2,415 ft., is shut down at 7,096 ft. to run casing. The Marcellus shale was logged at 6,900-7,055 ft.

In Derry Township, Westmoreland County, Peoples Natural Gas Co. 4-3,814 Camilla Giffin, elevation 2,238 ft., reported the Onondaga chert at 7,258 ft. and is shut down at 7,259 ft. to run casing.

Eight new locations were reported: one in Patton Township, Allegheny County; two

in Plumcreek Township, Armstrong County; and one each in Clarion and Limestone townships, Clarion County; Armstrong and Washington townships, Indiana County, and Allegheny Township, Westmoreland County.

CANADIAN FIELDS

Redwater and Pincher Discoveries Look Good

CHATHAM.—In the Pincher Creek area of the Canadian foothills, Gulf Canadian-Pincher Creek 1, LSD 15, 24-3-29w4, bottoming at 12,516 ft., has completed perforating in the lower lime and is on production test. It flowed on initial tests at 11,755-12,220 ft., the first test showing recovery of 236 bbl., mostly load oil, accompanied by gas at the rate of 8,000,000 cu. ft. The ensuing 24-hour test with ½-in. choke yielded 367 bbl. of 51.5°-gravity oil and 8,600,000 cu. ft. gas with no water from the lower section. Tests are continuing. Gulf Canadian-Walter Marr 1, LSD 1, 29-4-29w4, north and west of the discovery, is below 7,841 ft.

Redwater.—In the Redwater area, northeast of Edmonton, Imperial-Redwater 1, LSD 1, 32-57-21w4, at 3,210 ft. is definitely a good commercial producer. An Imperial official at Toronto states: "We have a very good well at Redwater, and it looks as if we have a discovery there of importance. But you cannot build up estimates of the size of an oil field from output of one well."

Porosity was encountered at 3,107 ft. and has been continuous to the last reported depth. Drill-stem tests have been made at frequent intervals, oil being brought to the surface in as little as 13 minutes, the first test being made around 3,131 ft. Production, from Devonian limestone, is around 34°-gravity, similar to that encountered in the Devonian at Steveville-Princess and only a few points heavier than the Leduc product. The accompanying gas flow is comparatively small, though more substantial shows were encountered in the lower Cretaceous and the top of the Devonian. The Devonian is approximately 2,000 ft. shallower than in Leduc field, and the porosity is much thicker.

The field is approximately 42 miles north and somewhat east of Edmonton, and the test centers an Imperial Oil Co. reservation of 100,000 acres. Additional drilling will be undertaken to determine the extent of the potential field.

Leduc.—In Leduc field, Atlantic South Relief well, LSD 5, 23-50-26w4, has reached Atlantic 3 hole in green shale, and with the wild well already under control as a result of water injected through the West Relief well, sealing off operations are being commenced. During its career Atlantic 3 marketed 985,174 bbl. valued at $2,970,000, while 240,730 bbl. were pumped back into the formation through other Atlantic wells.

Imperial 70, LSD 3, 35-50-26w4, finished below 5,190 ft., has 1,818 bbl. initial potential. Imperial 94, LSD 15, 4-50-26w4, south end well, at 5,417 ft., has 500 bbl. potential. Imperial 99, LSD 13, 3-50-26w4, has 1,866 bbl. potential. Imperial 90, LSD 2, 34-50-26w4, at 5,120 ft. has 2,483 bbl. Imperial 10, LSD 14, 16-50-26w4, had 1,065 bbl. potential.

Central Co-Op 5C, LSD 13, 25-50-26w4, first producer from the lower Cretaceous, after an initial test at 3,832 ft. which showed 8 bbl. an hour, has set casing and is drilling out plug for final tests. In the extreme south end of the field, Okalta 4, LSD 7, 33-49-26w4, on initial test got 400,000 cu. ft. gas and 1,200 ft. of oil in the pipe, with some drilling mud.

Leduc Consolidated 2, LSD 15, 23-50-26w4, last October finished a producer at 5,359 ft. from a narrow section of the D-3 zone, is redrilling 1,700 ft. at the base of the hole to recover D-3 production. Production was lost apparently as a result of early efforts to plug Atlantic 3 wild well. Directional drilling is being undertaken from 3,700 ft. to the northwest.

Cherhill.—In the Cherhill area northwest of Edmonton, Texaco-McColl 1-34, LSD 1, 34-56-5w5, is coring below 4,966 ft. to test the lower horizons after initial drill-stem test showed 490 ft. of 10°-gravity crude with 3,000 ft. salt water.

Dapp.—In the Dapp area, northwestern Alberta, Imperial-Dapp 1, LSD 5, 29-62-1w5, is coring below 3,274 ft. after getting showings of oil, gas and salt water in the lower Cretaceous.

Pouce Coupe.—In the Pouce Coupe area, in the northern Alberta foothills just east of the British Columbia boundary, Peace River Natural Gas 2, LSD 9, 24-80-18w6, got a gas sand at 2,250 ft., developing initial flow of 23,800,000 cu. ft. daily. Operations are being conducted by Vancouver interests in conjunction with Pacific Petroleums. A new test has been located in LSD 15, 16-8-13w6, 3 miles west.

Muskeg.—Northwest of Edmonton, N.F.A. Muskeg 1, SE 24-57-6w6, is developing into a deep test, with drilling in progress below 10,000 ft.

Turner Valley.—In the old North Turner Valley field, Royalite 73, LSD 9, 22-20-3w5, finished at 8,418 ft., is acidizing and testing the newly discovered lime block below the original porous zone. The deeper lime was encountered at 7,630 ft. and deepening to 8,418 ft., indicated three porous zones, with total porosity around 235 ft. A good commercial producer is indicated. It is expected other small producing wells in the same area will be deepened.

Hanna.—Hanna Petroleums 1, LSD 8, 5-32-15w4, after drill-stem test indicated a wet gas flow of 10,000,000 cu. ft. in the Madison, has set casing at 3,639 ft. and perforated for a definite production test. The gas is also being tested for distillate. Rig will be moved for Hanna Petroleums 3, in

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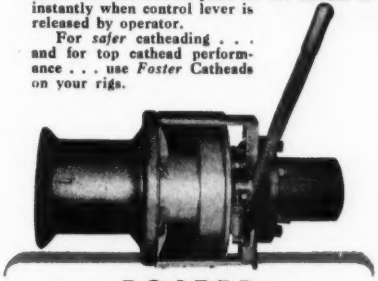

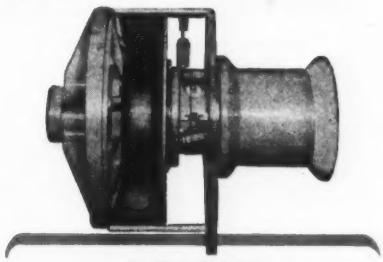

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LSD 11, 32-50-15w4, and a third well is to be drilled.

Ontario.—Drilling in the bed of Lake Erie, 1 mile off shore and almost opposite Port Alma in Kent County, West Petroleums 3 encountered gas at 1,210 ft., apparently in the Salina or upper Guelph-Niagara formation. The well was shot with dynamite, increasing production to 1,000,000 cu. ft.

In northern Ontario interests connected with Gulf Oil Co. have leased acreage around Earlton, 20 miles north of New Liskeard, and are carrying on survey work preparatory to drilling.

EASTERN TEXAS

Woodbine Prospect Tests Better Shows

DALLAS.—Geier-Jackson, Inc., 1 Southern Pine Lumber Co., prospective Woodbine discovery in the N. Jones Survey, 9½ miles west and slightly south of Alto, Cherokee County, after several weeks of testing, was making a better show of oil but salt water was still present. In 5½ hours, from perforations at 5,313-15 ft., the well flowed 73 bbl. of fluid, being 85 per cent oil and the balance salt water. Pressure on casing was 450 psi.; tubing pressure was not reported. Before the above gage, operators said the well flowed 261 bbl. of fluid, cutting 30 per cent salt water, in 24 hours. Operators are waiting on pump. A month ago the well made several flows of oil, water and mud, then was swabbed down to produce about 10 per cent oil and the balance salt water.

Standard Oil Co. of Texas 1 T. E. Acker, northwest of Maydelle, Cherokee County, prepared to drill plug. Total depth is 5,771 ft. Union Producing Co. 1 J. M. Travis, 3 miles southeast of Mount Selman, had total depth at 8,489 ft. and prepared to drill ahead. Cores from 8,439-89 ft. recovered 50 ft. of limestone with no shows.

In Hopkins County, Nacagdoches University Survey, A-703, The Texas Co. 1 M. L. Kendrick was running casing to 4,500 ft., total depth, to test the Woodbine topped at 4,452 ft. Coker sand was topped at 4,182 ft., with good odor and oil show at 4,192 ft. The section was not tested.

Standard Oil Co. of Texas was preparing to work over its 1 Lucinda Green, Edwards limestone wildcat 3 miles west of Gause in Milam County. With total depth at 5,742 ft., it has pumped around 30 bbl. of oil a day, plus considerable salt water. Perforations in casing are from 5,697-5,704 ft.

One mile east of Garrison, Nacogdoches County, Sakrnasa Fuel Oil Co. 1 Sarah B. Adams prepared to drill ahead below 7,781 ft. It cored a gas show in hard, sandy shale between 7,757-74 ft., and a very slight gas odor from 7,774-81 ft.

Lone Star Producing Co. 1 Dixie Hall, Travis Peak wildcat 3 miles north of Cross Roads, Rusk County, ran a 1-hour and 45-minute drill-stem test of the Travis Peak at 7,696-7,787 ft., using ¼-in. chokes and 2,300 ft. of water. It produced a slight blow at the surface and recovered the water blanket and 60 ft. of rat hole mud with no shows.

Delta Drilling Co. 1 Max Rice, southwest of Tyler in Smith County, was installing pumping unit after testing perforations in the Paluxy at 7,572-7,608 ft. Swabbing from 6,000 ft., with fluid level at 4,700 ft. from surface, it recovered an estimated 75 per cent wash water and 25 per cent black oil. In 24 hours it swabbed 87 bbl. of fluid, averaging 35 per cent oil and the balance wash water. Operators said the final swab recovered clean oil.

EAST TEXAS (DISTRICTS 5 & 6) WILDCAT FAILURES

Anderson County: Sanders & Murchison 1 Eula DuPuy, Wm. Ashmore Sur., 14 mi. NW Palestine, dry, TD 9,812 ft.

Austin 3,985-4,367 ft., Woodbine 4,670 ft., Massive anhydrite 8,586 ft. Travis Peak 9,760-70 ft., elev. 294 ft.

Hopkins County: Delta Drilling Co. et al 1 H. W. Wilson, A. O. Wetmore Sur., 5 mi. S Sulphur Bluff, N of field, dry, TD 9,513 ft., Woodbine 3,610 ft., Buda 4,292 ft., Paluxy 5,217 ft., elev. 450 ft.

Lamar County: Denver Daugherty 1 A. G. Morton, Elijah Benton Sur., 5½ mi. W Sumner, dry, TD 2,933 ft., Woodbine 921 ft., Georgetown 1,340 ft., Paluxy 1,665 ft., Glen Rose 2,306 ft., by samples.

Marion County: Lewis T. Lohman & Sydney Gardiner 1 Mrs. C. C. Chew, Ed Meyer Sur., 15 mi. SE Jefferson, dry, TD 6,368 ft., Nacatoch 1,065 ft., Saratoga 1,425 ft., Blossom sand 2,075 ft., Goodland 2,740 ft., Paluxy 3,010 ft., Glen Rose 3,295 ft., Massive anhydrite 4,790-5,050 ft., James 5,550 ft., Pettit porosity 5,975 ft., Travis Peak 6,144 ft., elev. 180 ft.

thought to have definitely proved the two areas to be separate accumulations. It might well be that the two areas are one field with an area of spotty production due to shaling out of the sand or some other local sand condition. In any case it will take considerable more drilling before it can be determined definitely whether or not the two areas will eventually link up.

CALIFORNIA SUCCESSFUL WILDCAT

Los Angeles County, West Montebello area: Rothschild Oil Co. 2 Wheeler, 2-2s-12w, pumped 30 bbl. daily, elev. 520 ft., TD 2,940 ft.

CALIFORNIA WILDCAT FAILURES

Kern County, Comanche Point area: C.C.M.O. Co. 1 Tejon Ranch, 23-32s-29e, dry in basement complex, elev. 585 ft., TD 4,680 ft.

McKittrick area: Pacific Western Oil Corp. 22 Lucas, 29-30s-22e, dry, elev. 2,235 ft., base Tulare 660 ft., top Miocene 1,900 ft., Lucas sand 2,248 ft., TD 2,520 ft.

Mountain View area: H. H. Magee, Operator 1 Magee-Mohawk-Osborn, 36-29s-28e, dry, elev. 433 ft., TD 5,196 ft.

Los Angeles County, Inglewood area: Standard Oil Co. of Calif. 12 Stocker, 16-2s-14w, dry, elev. 245 ft., TD 2,431 ft.

Puente area: Louis H. Didier 1 Wilson Ranch-Didier, 19-2s-9w, dry, elev. 615 ft., TD 2,255 ft.

Orange County, West Newport area: Habco Oil Co. 1 Jefferson, 21-6s-10w, dry, elev. 69 ft., TD 632 ft.

Monterey County, Bradley area: Barnsdall Oil Co. 1 R. & W., 21-23s-12e, dry, elev. 1,050 ft., top red beds 3,010 ft., TD 4,100 ft.

CALIFORNIA

First Leda Sand Pool Opened in Fresno County

LOS ANGELES.—Barnsdall Oil Co. has confirmed the discovery of a major oil field in the Guijarral Hills of Fresno County by announcing the completion of its 1 Fred Smith, 34-20s-16e. On initial production tests, the well flowed at the rate of 827 bl. of oil daily through a 16/64-in. choke. Gravity of the oil was 37°, and water cut 0.2 per cent. Initial gas flow was gaged at 680,000 cu. ft. daily with a tubing pressure of 1,160 lb., but on production tests since completion both flow and pressures have been building up steadily. The well currently has been pinched back to a steady production of 400 bbl. daily, but Barnsdall officials have stated that a conservative estimate of the open flow potential of the well would be from 2,000 bbl. daily up.

Production at the 1 Fred Smith is coming from the Leda sand at a depth of 8,660-8,730 ft., and the well is bottomed at 8,730 ft. This is the first Leda sand production ever found in the state.

Barnsdall has staked location for a follow-up well in the area, the 84-34 Allison, 34-20s-16e. Both Standard Oil Co. of California and Robert Lytle, who together hold a majority of the land in the area under lease, are planning to undertake ventures here in the near future. Standard's test will be located about 1 mile east of the discovery well, while Lytle's first venture will be located about ½ mile west of the 1 Smith.

Ring Oil Co. has announced the discovery of a new oil field on a structure paralleling the Mount Poso structure but about 2 miles west of it. The discovery well, known as the No. 20-1, is located in 20-27s-28e, in Kern County, and was completed in the Vedder sand at a total depth of 2,335 ft. Top of the oil zone was picked up at 2,310 ft. Estimates of the productive capacity are unknown since the well was completed on pump and immediately shut in. It is doubtful that the new find will be of primary importance, however, since some 15 wildcats had been drilled in the immediate area previously without success.

Excitement was created in the Cuyama Valley during the past week as the result of unofficial reports that the Richfield Oil Corp. 41-31 Quality, 31-11n-27w, had picked up the Colgrove sand at a depth of 2,670 ft. This is the sand which produces prolifically in the White Rock area of the field to the northwest. The 41-31 Quality is located about midway between the White Rock and Russell Ranch areas of the Cuyama Valley, and a successful completion would undoubtedly link the two areas into one long field. Several weeks ago the abondonment of a well on the Quality lease was

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1770 E. Flower St., Los Angeles, Calif.

Santa Barbara County, San Marcos area: Fred M. Manning 1 Lazy RG, 24-6n-29w, dry, elev. 1,100 ft., TD 4,868 ft.

MICHIGAN

Nine New Wells Have Potential of 1,125 Bbl.

SAGINAW.—Nine oil wells, their initial daily potential ranging from 15 bbl. to 240 bbl., were completed in Michigan fields in the past week. The combined potential was 1,125 bbl. In addition four gas wells were added, three in Clare County producing initially at 6,000,000 cu. ft. and one in Newaygo County rated at 17,300,000 cu. ft. Five of the eight dry holes were wildcats Twenty-four new locations in 12 counties were announced.

Best of the new wells were two completed in Oceana County's Pentwater field. Two were added in Allegan County, two in Van Buren. Other producer completions were in Gladwin, Midland, and Montcalm counties. Wildcat completions included Stork Oil Co. 1 Stork in Reno Township, Iosco County, on which work had continued off and on since November 1946. It was abandoned at 4,375 ft. after yielding slight shows of oil and gas at higher levels.

New locations are concentrated in three counties, five in Arenac, five in Van Buren, four in Allegan. Other operations are set at two locations in Isabella County, one each in Kalkaska, Missaukee, Ogemaw, Crawford, Oceana, Mason, Osceola, and Tuscola.

MICHIGAN WILDCAT FAILURES

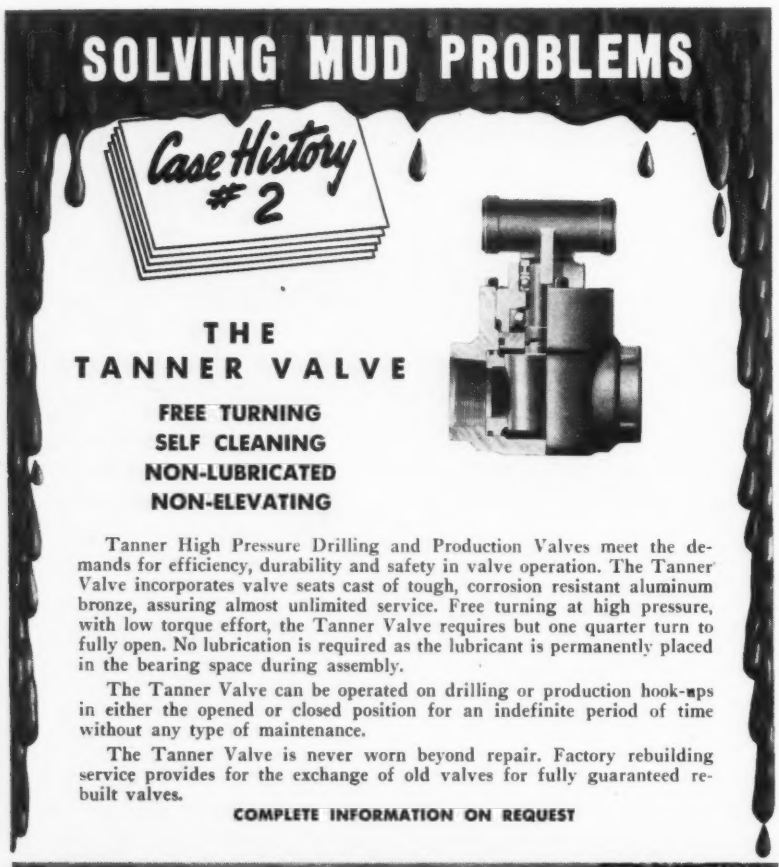
Allegan County, Fillmore Township: Ford Oil Co. 1 Warren and John Alof, SE SE NW 17-4n-15w, dry in Traverse limestone, TD 1,485 ft.

Arenac County, Lincoln Township: Ervin Major 1 Tennis Rancourt, SE NE SW 11-18-4e, dry, TD 4,210 ft.

Iosco County, Reno Township: Stork Oil Co. 1 Fred W. Stork, SE SE SW 3-22n-5w, dry, TD 4,375 ft.

Kent County, Ada Township: James J. McGarry, Tr., 1 Ralph Standard, SW NE SW 15-7n-12w, dry, TD 1,635 ft.

Oceana County, Elbridge Township: H. C. Nelson 1 A. Gale, SE SW SW 30-15n-16w, dry in Traverse limestone, TD 1,929 ft.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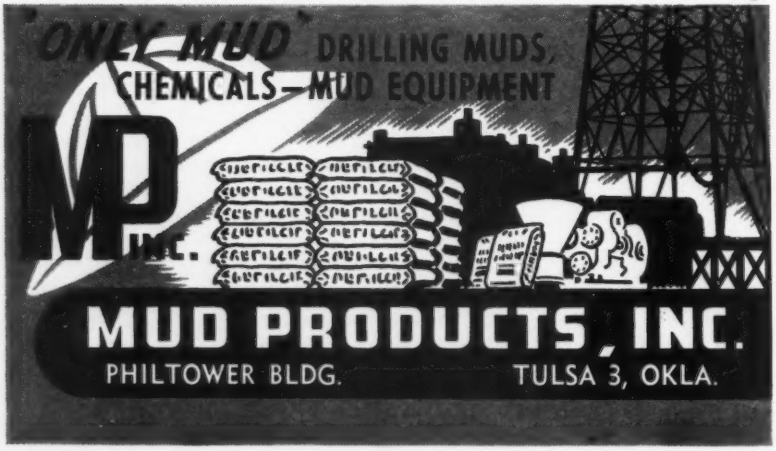

KANSAS

Nemaha County Gets Its First Oil Pool

CARTER OIL CO. has given Nemaha County its first oil pool with production at 1 Mamie Strahm, SW SW NW 27-2s-14e, about 16 miles southwest of Livingood pool in Brown County. Production at the Strahm well is from the Hunton called at 2,847 ft. Casing was set at 2,848 ft. and total depth is 2,879 ft. Before acid treatment, the well bailed about 30 gal. per hour but on preliminary test following acid treatment, well pumped 38 bbl. in 9 hours with no water. From these early tests, the well appears to be good for about 100 bbl. per day.

Skelly Oil Co. has completed 1 Gemeinhardt, NW NW SE 18-18s-10w, Rice County, to open the Gemeinhardt pool. Pumping potential is 282 bbl. per day from the Arbuckle topped at 3,293 ft. Casing was set on top of the formation and the hole bottomed at 3,297 ft.

Brenham gas pool in Kiowa County has been extended about 1 mile to the north by J. M. Huber Corp. and Rine Drilling Co. et al 1 Cullins, NW NW SE 20-28s-1w. Production of 1,821,000 cu. ft. of gas plus 2 bbl. of oil per day is from the Mississippian, called at 3,834 ft.

Sunray Oil Corp. has extended Pleasant pool of Ellis County by about ¼ mile with the completion of 1 Pfannenstein, NE NE NE 10-14s-20w. Well is rated at 135 bbl. per day from the Regan sand.

Palco pool in Rooks County has been extended about ½ mile to the southwest by Heathman-Honaker 1 Miller, SW SW NE 5-10s-20w. Initial production was 482 bbl. per day from the Arbuckle, called at 3,825 ft. Total depth is 3,835 ft.

Lindas Oil Co. has extended Riverview pool ½ mile to the west with completion of 1 McNeely, SW SW NE 30-11s-18w. Well swabbed 10 bbl. per hour from the Arbuckle following 500-gal. acid treatment. The Arbuckle was called at 3,611 ft. and hole was bottomed at 3,620 ft.

New locations for the week totaled 77. Butler County led with 13, followed in order by Rice with 12, Barton and Rooks with 8 each, Russell with 7, and Stafford with 6.

KANSAS SUCCESSFUL WILDCAT

Rice County: Birmingham-Bartlett 1 Habiger "C," NW NE SE 6-18s-9w, pumped 84 bbl. of 46°-gravity oil per day from Arbuckle at 3,234-43 ft.; anhydrite 450 ft., Lansing 2,898 ft., TD 3,243 ft.

KANSAS WILDCAT FAILURES

Edwards County: W. H. Black 1 Embry, C W/2 NW SW 23-24s-16w, dry, TD 4,593 ft., anhydrite 1,030 ft., Kansas City 3,683 ft., basal Kansas City 4,029 ft., Mississippian 4,215 ft., Kinderhook 4,265 ft., Misener 4,273 ft., Simpson 4,489 ft., Arbuckle 4,543 ft.

McPherson County: Barbara Oil Co. 1 Cane, NE SW NE 27-19s-1w, dry, TD 2,944 ft., Mississippian 2,927 ft.

Rice County: Flourney & Williams 1 Hammell, NE NE NE 16-19s-10w, dry, TD 3,095 ft., Lansing 3,090 ft.

Rush County: Ben Brack Oil Co. 1 Weigt, SW SW NE 17-18s-16w, dry, TD 3,581 ft., anhydrite 987 ft., Heebner 3,162 ft., Toronto 3,177 ft., Lansing 3,232 ft., basal Kansas City 3,442 ft., conglomerate 3,488 ft., quartzite 3,560 ft.

Virginia Drilling Co. 1 Tammen, SW SW SW 34-19s-18w, dry, TD 4,099 ft., anhydrite 1,270 ft., Kansas City 3,606 ft., basal Kansas City 3,870 ft., conglomerate 3,998 ft., Arbuckle 4,030 ft.

Sedgwick County: Penguin Drilling Co. et al 1 Tobin, NE NW NE 29-26s-2e, dry, TD 2,995 ft., Kansas City 2,507 ft., Mississippian 2,974 ft.

NEBRASKA WILDCAT FAILURE

Richardson County: Cities Service Oil Co. 1 Boose, NE SE SW 28-1n-18e, dry, TD 3,310 ft., Lansing 599 ft., Mississippian 1,883 ft., Hunton 2,300 ft., Viola 2,873 ft., Simpson dolomite 3,114 ft., Simpson sand 3,200 ft., Arbuckle 3,228 ft.

OKLAHOMA

Misener Pay Added To Jones Pool

ANDERSON-CAREY DRILLING CO and Russell McGuire have added Misener production in Jones pool at 1 Hanson, NE NE SE 5-12n-1e, Oklahoma County. A 1-hour drill-stem test at 5,687-5,740 ft. had gas in 12 minutes and recovered 400 ft. of oil slightly cut with mud and 53 ft. of mud. The Misener was shown to be at 5,724-33 ft. from electric log. Operators are planning to move back and deepen two wells north of the new producer since they were abandoned at less than 5,000 ft. Other production in Jones pool is from Cleveland sand.

Phillips Petroleum Co. has new production southwest of Panther Creek pool at 1 Nesbitt, SE SE NW 34-3n-3w, Garvin County. A 23-minute drill-stem test of the Pennsylvanian at 8,057-75 ft. had gas in 16½ minutes and oil in 20 minutes. Flow was 4 bbl. in the following 3 minutes and recovery was 990 ft. of 42.5°-gravity oil and 6,600 ft. of oil-cut mud. The well is about ¾ mile north of the new pool opened last month by Carter Oil Co. 1 Rose-Vose.

Mid-Continent Petroleum Corp. has what appears to be another new pool opener in Okfuskee County at 1 Harman, NW SE SE 33-13n-10e. The second Booch was called at 2,775 ft. and a 65-minute drill-stem test at 2,958-72 ft. had gas in 11 minutes and recovered 770 ft. of oil and 100 ft. of muddy oil. Well is about 1 mile southeast of South Haydenville pool that was opened by Mid-Continent last month.

Carter Oil Co. has pushed production to the south in Northeast Elmore pool with a big well, 1 Lelia McConnell, NW SW SE 23-2n-2w, Garvin County. Casing was set to 6,530 ft. and the well bottomed at 6,565 ft. including the Gibson pay. Plug was drilled and the well flowed 422 bbl. in 7 hours.

Development continues in the Ceres area where Sinclair Prairie Oil Co. is completing 5 Steichen, NE SW NW 3-22n-1w, Noble County. The well swabbed in and flowed 541 bbl. in 11 hours from the Bartlesville at 4,508-64 ft. To the southwest and separated by one location, Tide Water Associated Oil Co. is washing in after drilling plug at 4 Haefner, NE NE SE 4-22n-1w, Southwest Ceres pool. This well found the sand at 4,568-4,607 ft. When these wells are completed there will remain only the one undrilled location between South Ceres and Southwest Ceres pools.

OKLAHOMA SUCCESSFUL WILDCATS

Kay County: New pay in NW Garrett (geological test)—Carter 1 School Land-Duck, SE SE SW 13-27n-1e, 527,000 cu. ft. of gas from Skinner at 3,570-83 ft., TD 3,850 ft.

Payne County: Jergins 1 Boyd, SE SE NW 28-18n-4e, 2,000,000 cu. ft. of gas from Skinner at 3,475-86 ft., TD 3,687 ft.

Seminole County: New pay in NE Bethel—Traugh 1 Crawford, NW SE NW 24-10n-7e, pumped 15 bbl. of 38°-gravity oil per day from Gilcrease at 3,467-72 ft. and 3,536-50 ft., TD 3,636 ft.

OKLAHOMA WILDCAT FAILURES

Atoka County: Peters 1 Young, NW NW SE 16-3s-11e, dry, TD 400 ft., no tops reported.

Beckham County: Burdell 1 Dugger, NE NW SW 31-9n-23w, dry, TD 3,012 ft., Blaine 340 ft., anhydrite 2,094 ft., dolomite 2,670 ft., granite wash 2,820 ft.

Carter County: Sun 1 Miller, SW SE NW 8-1s-3w, dry, TD 3,752 ft., fusilinid sand 3,273-3,360 ft., sandy shale 3,568-3,640 ft.

Cotton County: Tillman 1 Scherler, NE NW NE 27-2s-13w, dry, TD 2,014 ft., no tops reported, no shows.

Bridwell 2 Henderson "A," SE NE SE 23-3s-11w, dry, TD 1,469 ft., broken sand 1,438-64 ft. with show of gas, sand 1,464-69 ft., with show of oil.

Garvin County: Lockett 1 Freeman, NW SW NE 36-1n-1w, dry, TD 2,016 ft., no tops reported.

Lincoln County: Mid-Continent 2 Hillman, SE SW NE 29-13n-6e, dry, TD 4,278 ft., Prue 3,116 ft., Red Fork 3,504-36 ft., Mayes 4,050 ft., Woodford 4,222 ft., Hunton 4,250 ft.

Logan County: United 1 State, SW SW SE 36-15n-1e, dry, TD 5,510 ft., Deer Creek 1,970 ft., lower Hoover 2,191 ft., Oread 2,465 ft., Tonkawa 2,740 ft., Avant 4,109 ft., Dewey 3,158 ft., Perry 3,199 ft., Hogshooter 3,683 ft., Layton 3,718 ft., upper Checkerboard 3,772 ft., lower Checkerboard 3,975 ft., upper conglomerate 3,992 ft., Big Lime 4,258 ft., Peru 4,407 ft., upper Oswego 4,502 ft., lower Oswego 4,539 ft., Prue 4,629 ft., Verdigris 4,678 ft., Red Fork 4,733 ft., Inola 4,808 ft., Bartlesville 4,822 ft. Woodford 5,006 ft.,

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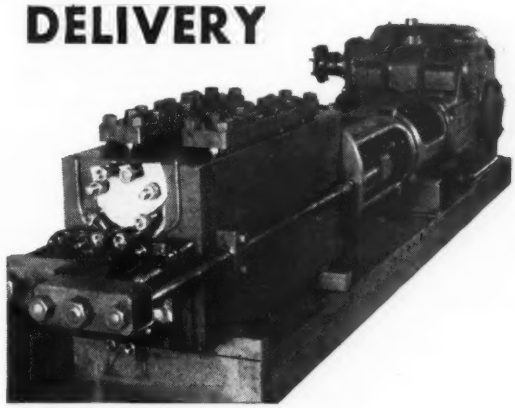

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McClain County: Mealey-Wolfe 1 Berry, C SE SW 7-5n-1e, dry, TD 6,420 ft., basal Pennsylvanian and chat 5,968 ft., Hunton 6,128 ft., Sylvan 6,378 ft.

Noble County: Sun 1 McBride, SE SE SE 4-21n-2e, dry, TD 4,590 ft., Woodford 4,439 ft., Viola 4,480 ft. ,dense 4,505 ft., dolomite 4,514 ft., Wilcox 4,538 ft., second Wilcox 4,573 ft.

Howell 1 Green, NW NW SW 6-23n-1e, dry, TD 4,565 ft., Tonkawa 2,650 ft., Layton 3,395 ft., Oswego 3,966 ft., Red Fork or Bartlesville 4,344-52 ft., Mississippi lime 4,528 ft.

Okfuskee County: Crosbie 1 Janeway, NE NE NW 16-11n-7e, dry, TD 4,754 ft., Hogshooter 1,390 ft., conglomerate 1,727 ft., Wewoka 1,970 ft., Prue 2,560 ft., Booch 3,730 ft., Cromwell 3,888 ft., Mayes 4,270 ft., Woodford 4,405 ft., Misener 4,428 ft., Hunton 4,430 ft., Sylvan 4,545 ft., Viola 4,634 ft., Wilcox 4,697 ft., second Wilcox 4,730 ft.

Seminole County: Nye 1 Kelly, SE SW NE 12-10n-7e, dry, TD 3,625 ft., Checkerboard 1,383 ft., Wewoka 1,673 ft., basal Wewoka 2,014 ft., Oswego 2,056 ft., upper Calvin 2,082 ft., middle Calvin 2,210 ft., coal 2,470 ft., Senora lime 2,566 ft., Senora sand 2,572 ft., Inola 3,065 ft., Bartlesville 3,074 ft., Booch 3,385 ft., Gilcrease 3,498 ft., Union Valley 3,605 ft.

ROCKY MOUNTAIN

Utah Gets First Commercial Oil Well

DENVER. — Utah's first commercial oil well will probably be completed at its present depth flowing approximately 6 bbl. of 33°-gravity oil per hour. The well is Equity Oil Co. of Salt Lake City's 1 Ashley Valley, C SW SW 23-5s-22e, Uintah County, 30 miles northwest of the Rangely field in Colorado. Top of the Weber has been corrected to 4,136 ft., and total depth is 4,152 ft. The top of the sand was well saturated and porous, as compared to a hard sandstone found in the Rangely field. Casing was cemented at 4,134 ft. and the well started flowing after tester was open 2 hours and 38 minutes. Little gas is reported with the oil and, although there is estimated to be more than 1,000 ft. of Weber sand in this area of the Uintah Basin, the operators plan to complete the well at the present depth rather than attempt to find a water level lower in the sand. Stanolind Oil & Gas Co., The California Co., Rogers Lacey, Phillips Petroleum Co. and others have acreage in the Ashley Valley area and it is expected that additional tests will be drilled in the area soon. Although Utah has several gas fields there has been little oil production in the state. In the Virgin area of southeastern Utah, where oil was discovered in a monocline in 1907, the total production is less than 200,000 bbl. At Woodside in Emery County, small production has been established with less than 40 bbl. of 30°-gravity oil daily from a number of shallow wells. During the past 3 years there has been a great deal of exploratory work done in the state by a number of the larger operators and several deep wildcats have been drilled as a result of this geological and geophysical work. Discovery of oil in the Equity well will undoubtedly lead to further wildcat drilling in this section of the state.

Phillips Petroleum Co.'s discovery well in the South Cole Creek area, Converse County, Wyoming, is flowing at the rate of 346 bbl. of 35°-gravity oil in 24 hours from perforations in the top of the Lakota formation. The casing, which was cemented at bottom at 8,380 ft., was perforated with 120 holes between 8,294-8,314 ft. Previously the well flowed 118 bbl. of oil per day from perforations in the base of the sand between 8,314-24 ft. The lower section of the hole is now believed filled with cavings and the operator will clean out prior to making additional tests. On the rate of fill-up on a drill-stem test taken in the Lakota, the well was originally estimated good for as much as 70 bbl. of oil per hour and it is probable that after cleaning the hole production from the well will increase. The Lakota was topped at 8,289 ft. and the 34 ft. of sand was well saturated. This discovery, between the Big Muddy and Cole Creek fields, has increased interest in the southwest side of the Powder River basin and it is probable that several other wildcats will be drilled in the area in the next year.

Location is now being made for an interesting wildcat in the Salt Basin area of Utah, where a number of oil operators have acquired acreage blocks in the past 2 years. The new location is on Pure Oil Co.'s Northeast Salt Valley unit area, covering approximately 16,000 acres in Townships 22s and 23s, Ranges 20e and 21e, on the large Salt Valley anticline. In 1931, Utah Southern Oil Co. had a good show of oil in the Paradox at the 1 Balsey, C NE NE 31-23s-21e, but the well was finally abandoned at 6,170 ft. Several wells have been drilled on the structure to shallow zones but none have tested through the Paradox section.

Water was recovered on drill-stem test in the Tensleep on the Phillips Petroleum Co. Rex Lake field deep test at Rex Lake, NW SE NE 26-16n-77w, Albany County, Wyoming. Top of the Tensleep was logged at 5,794 ft. and the well found saturation in the upper 11 ft. of sand. However, on a 15-minute test with total depth at 5,825 ft., the well made 1,748 ft. of fresh water, with no oil or gas. Phillips will drill deeper into the Tensleep before plugging back and testing the saturated section in the top of the sand

New locations.—There were 20 new locations made, with 9 of the wells in Wyoming, 7 in Montana, 2 each in Colorado and Utah. In Wyoming, Amerada made location for the first well on a sizeable lease spread through the northeast section of the Powder River Basin in Wyoming and Montana. The well is 1 Starr, SW NE NE Tract 52-32-58n-66w, in the Lightning Flat area of Crook County. It will be drilled to Lakota. Previous wildcats south of this area in the Rocky Point district have been failures and Hunt Oil Co. operations across the line in Carter County, Montana, have failed to find production to the Newcastle. In the Casper area, Natrona County, Merle Morton is rigging up rotary for a 4,500-ft. Dakota test at 1 Pratt, NW NW NE 13-33n-79w. This well is located east of the town of Casper on folding near the Casper Mountains and no previous deep tests have been drilled in the vicinity. Location at 10 Notches has been made by Trigood Oil Co. in SW SW SW 3-37n-85w, Natrona County, and the well will be the first to go to granite in the field. In the Salt basin of southwestern Colorado, American Liberty Oil Co. of Dallas is moving in rotary for a 10,000-ft. test on the large Paradox structure. The well will be 1 Government, C SW SW 10-46n-17w (NMPM), on the southeast side of the structure.

The deepest test on the structure was drilled 20 years ago by General Petroleum Corp. and went to around 8,200 ft. in the Paradox formation (Pennsylvanian). The anticline is more than 20 miles long and 5 miles wide and is one of the largest surface structures in western Colorado. In Utah location has been made by Pacific Western Oil Co. for a wildcat on the Teasdale Unit. The well is 1 Unit, NW NW NE 17-30s-6e, Wayne County, and a deep test is proposed on the structure.

WYOMING WILDCAT FAILURES

Carbon County, Shirley basin: Amerada & Sohio 1 Sullivan Co., NW SE SE 17-26n-80w, completed as water well in Lakota, TD 3,322 ft., Muddy 556 ft., Dakota 662 ft., Lakota 745 ft., Sundance 916 ft., Alcova 1,484 ft., Chugwater 1,504 ft., Embar 2,085 ft., Casper 2,448 ft., Madison 2,918 ft., Cambrian 3,007 ft., pre-Cambrian 3,306 ft., elev. 7,076 RB.

Goshen County, Van Tassell: General Pet. 45-32-P, NE NE SW 32-30n-60w, dry, TD

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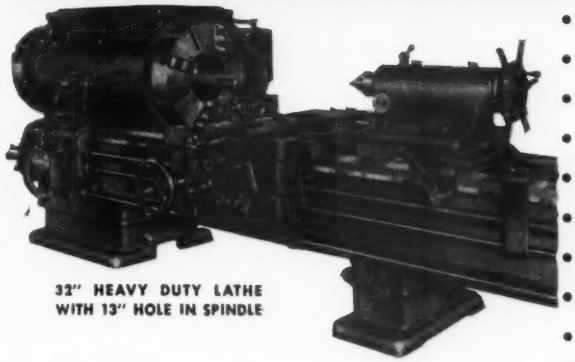

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Natrona County, North Casper Creek: Pue 1 Unit, C SE SE 36-37n-82w, dry, TD 4,638 ft., Dakota 1,458 ft., Morrison 1,510 ft., Sundance 1,704 ft., Chugwater 2,060 ft., Alcova 2,195 ft., Embar 2,835 ft., Tensleep 3,225 ft., Amsden 3,360 ft., Madison 3,828 ft., Cambrian 4,079 ft., pre-Cambrian 4,596 ft., elev. 5,557 ft. GR.

Niobra County, South Dakota High: Roy Sharp et al 1 Alter, SE SW SW 14-34n-64w, dry, TD 150 ft.

Weston County, Soda Butte: Delta Drilling & Continental Oil Co. 1 D. Nolan, SW NW NW 24-47n-66w, dry, TD 5,200 ft., first Frontier 3,568 ft., Greenhorn 3,775 ft., Dakota 5,046 ft., Lakota 5,133 ft., Lakota sand 5,153 ft., Morrison 5,173 ft., elev. 4,406 ft. RB.

COLORADO SUCCESSFUL WILDCAT

Moffat County, new pay in Maudlin Gulch: Texas-Frontier 2 Unit, SE NE SE 27-4n-95w, swabbed 153 bbl. per day, pumped est. 150 bbl. per day from Sundance topped at 6,391 ft., 7-in. csg. 6,408 ft.; Frontier 5,392 ft., Dakota 5,747 ft., Morrison 5,800 ft., elev. 7,390 ft. RB.

COLORADO WILDCAT FAILURES

Adams County, East Lake: Clark Oil 1 Whytal, C N/2 NE 4-2s-68w, dry, TD 4,600 ft., Pierre shale 2,563 ft.

Mesa County, Gateway: Pure 1 Unit, NW SW SW 15-15s-104w, dry, TD 7,939 ft., granite 7,841 ft.

UTAH WILDCAT FAILURE

Grand County, Salt Valley: Walker Prod. 1 Gov't., SE SW NE 8-22s-19e, dry, TD 1,823 ft., Morrison 1,400 ft.

ILLINOIS

Richland County Well Is Big Producer

MATTOON.—In the northern part of Richland County and in the area just north of Stringtown pool, Russell P. Johnson and H. M. Williams Drilling Co. recently completed 1 John Von Almen Heirs, SE NE NW 31-5n-14w, with an initial production of 1,724 bbl. per day from the McClosky at 2,997-3,006 ft. The well is now making almost 2,000 bbl. per day and has added interest for the area. Two locations have been staked north of the well and in Section 30. Section 31 has one well drilling, another testing, and a third with surface pipe set.

Johnston Drilling Co. 1 G. E. Mathis, SE NE NW 17-9s-10e, Gallatin County, is on production test of the McClosky at 3,047-53 ft. The well pumped 368 bbl. of oil and 60 bbl. of water in the first 24-hour test following treatment with 6,500 gal. of acid. Johnston is rigging up at 1 Seeley, SE SE NW 17-9s-10e, and is moving in material at 1 C. B. Young, SW SW NE 9-9s-10e.

In White County, C. E. Brehm has set casing at 1 Ellis Johnson, SE SE SW 8-7s-8e, and is preparing to perforate opposite the McClosky at 3,050-60 ft. Total depth is 3,133 ft. The well is near the abandoned Gossett pool.

In Wayne County, Collins Brothers 1 A. J. Messman, N½ NW NW 33-1s-9e, is going on the pump to test the McClosky at 3,300-3,306 ft. The well recently swabbed 140 bbl. of oil in 8 hours following acid treatment. The Messman well is located southwest of Half Moon pool.

ILLINOIS SUCCESSFUL WILDCAT

White County: N. V. and W. Duncan 1 Barbare-Rebstock, SE NW NE 25-4s-9e, IP 15 bbl., Cypress, 2,863-80 ft., TD 3,280 ft.

ILLINOIS WILDCAT FAILURES

Bond County: Shell Oil Co. 1 M. E. Davidson et al, C NW NE 26-5n-3w, dry, TD 3,266 ft.

Clark County: Ernest Zink 1 Connelly, SE SE NE 22-11n-14w, dry, TD 652 ft.

Clinton County: T. B. Dirickson 1 Kleysteuber, NW NE NE 34-3n-1w, dry, TD 2,864 ft.

Jasper County: J. L. Black 1 J. R. Wattleworth, SW NW NE 12-7n-10e, dry, TD 2,414 ft.

Jefferson County: W. C. Willman 1 R. Wilson, CE½ SE SE 21-2s-2e, dry, TD 2,808 ft.

White County: C. E. Brehm 1 J. A. Sutton, Jr., SE SE SW 9-7s-9e, dry, TD 3,083 ft.

PERMIAN BASIN

Two More Completions Reported for Benedum

MIDLAND.—In western Upton County, Wilshire Oil Co. 1 McElroy, 5 miles east of the shallow McElroy field, Section 148, Block E, CCSD&RGNG Survey, treated perforations at 9,650-9,700 and 9,715-70 ft. with 500 gal. of mud acid. After swabbing load and residue, it recovered 1 bbl. of oil an hour during the next 6 hours. Shut in for 12 hours, the hole filled 5,700 ft. with fluid which was estimated to be 95 per cent oil. Operators then resumed swabbing but failed to lower the fluid level. Recovery on the last swabbing was not reported. The same section was to be retreated with 2,000 gal. of acid and tested further. Total depth was 13,977 ft., in the Ellenburger, plugged back to 9,780 ft. in the Pennsylvanian.

Fred Turner and J. M. Hewgley 1 Rosa Halff Barnett, Pennsylvanian discovery 3 miles northwest of Benedum field, was ready for completion after flowing 450.5 bbl. of 58.7°-gravity oil, or distillate, in 15½ hours through 7/16-in. choke, from perforations at intervals from 9,982-10,180 ft. It was shut in and was to complete on the basis of one 6-hour flow period out of the above test.

In Benedum field, completion potentials were reported for the fourth and fifth wells. Plymouth Oil Co. 1 Taylor & Sadler, southeast offset, rated 295 bbl. of oil through ⅜-in. choke, from pay at 11,281-11,502 ft., total depth. Gas-oil ratio was 3,590 cu. ft. Slick-Urschel Oil Co. 1 Mary Standifer, southwest offset, was the fifth completion. It flowed 519 bbl. of 60°-gravity oil or distillate in 11 hours, through ⅜-in. choke, from perforations at intervals from 11,280-11,490 ft. Gas-oil ratio was 3,485 cu. ft. Calculated daily potential was 1,133 bbl.

Across the county line in Regan County, Plymouth Oil Co. 1-46 Elliott, 1¼ miles northeast of the discovery, had gas flow under control after kicking and blowing for several days, from a section at 10,590-10,618 ft. Operators were circulating and conditioning hole, preparatory to running 7-in. casing to test the formation. Estimates on the amount of gas ranged from 10,000,000 to 20,000,000 cu. ft. a day. The well sprayed gas, mud, and some distillate. It was not determined if the gas-bearing section was Devonian or Pennsylvanian.

Magnolia Petroleum Co. 1-A TXL, Pennsylvanian discovery 30 miles northwest of Benedum field, was drilling ahead below 10,350 ft., apparently going to the Ellenburger as originally scheduled.

In northern Pecos County, Hiawatha Oil & Gas Co. was ready to abandon its 1 John G. Crockett at 3,946 ft., and had filed application for a new start on a second 10,000-ft. wildcat. Heavy water flow for several weeks, which caused lost tools, was the reason given for plugging and starting the new Ellenburger test. The new prospector will be the 1 J. C. Trees estate, 667 ft. from north and 330 ft. from east lines of Section 90, Block 8, H&GN Survey, which is about 3 miles southwest of Grandfalls and a short distance east of the 1 Crockett.

In west Pecos County, D. D. Thomas and J. W. Doss are to drill a 2,500-ft. cable-tool wildcat as the 1 University, 330 ft. from south and east lines of Section 19, Block 19, University Survey, and 27 miles southwest of Fort Stockton. In eastern Pecos, Jessee Russell, McCamey, Tex., was slated to start operations at his 1 Standard-Lowry & Wilson, an 1,800-ft. cable-tool operation 10 miles northwest of Iraan, Section 6, Block 194, GC&SF Survey.

Gulf Oil Corp. 1-KK University, 12 miles northwest of Andrews, Andrews County, will be an 8,600-ft. test into the Wolfcamp, lower Permian. Location is Section 14, Block 13, University Survey, and about ¾ mile west of Texas Pacific Coal & Oil Co. 1-F University, on the northeast side of Shafter Lake field, which is now showing for commercial production from the Clear Fork of the Permian around total depth of 7,331 ft.

WEST TEXAS (DISTRICTS 8 & 7-C) SUCCESSFUL WILDCATS

Cochran County: E. Constantin 1 James St. Clair, Labor 12, League 130, Carson CSL, pumped 47 bbl. oil a day, top pay 4,885 ft., TD 4,961 ft., PB 4,912 ft.

Honolulu Oil Co. 11-B Dean, League 89, Lipscomb CSL, pumped 76 bbl. 26°-gravity oil a day, San Andres 5,088 ft., TD 5,127 ft., elev. 3,743 ft.

Hockley County: Honolulu Oil Co. 1-13 Ellwood estate "B," Sec. 13, Blk. A, Thompson CSL, pumped 243 bbl. 24°-gravity oil a day, pay 5,855 ft., TD 6,043 ft.

WEST TEXAS (DISTRICTS 8 & 7-C) WILDCAT FAILURES

Gaines County: Cascade Petroleum Co. 1 McMurray, Sec. 80, Blk. H, D&W Sur., 12 mi. E Seagraves, dry, TD 5,305 ft., Rustler 2,180 ft., Yates 3,230 ft., dolomite 4,210 ft., elev. 3,179 ft.

Hockley County: Honolulu Oil Co. et al 1-24 Ellwood estate, Labor 24, League 5, Wilbarger CSL, dry, TD 11,633 ft., Ellenburger 11,300 ft., pre-Cambrian 11,616 ft., elev. 3,405 ft.

Howard County: Robert W. Atha 1 M. L. Musgrave, Sec. 9, Blk. 31, T&P Sur., 9 mi. NE Big Spring, dry, TD 5,000 ft., San Andres 2,717 ft., Glorietta 3,475 ft., Clear Fork 3,648 ft., elev. 2,517 ft.

Mitchell County: Standard Oil Co. of Kansas 1 G. W. Tickle, Sec. 19, Blk. 25, T&P Sur., 5 mi. NE Colorado City, dry, TD 7,600 ft., San Andres 1,200 ft., Clear Fork 2,160 ft., Pennsylvanian 4,870 ft., Mississippi 7,397 ft., Ellenburger 7,465 ft., elev. 2,211 ft.

Sterling County: G. H. Vaughn 1 Texas Pacific Land Trust, Sec. 1, Blk. 31, T&P Sur., 14 mi. W Sterling City, dry, TD 5,000 ft., Clear Fork 2,410 ft., elev. 2,570 ft.

Stonewall County: S. B. Roberts & W. H. Bryant 1 Harrison, Sec. 294, Blk. D, H&TC Sur., 6 mi. N Peacock, dry, TD 5,307 ft.

Ward County: Gulf Oil Corp. 1-E A. F. Bray, Sec. 14, Blk. 5, H&TC Sur., dry, TD 10,595 ft., Waddell gas sand 10,165 ft., elev. 2,461 ft.

SOUTHEASTERN NEW MEXICO

HOBBS.—Barnsdall Oil Co. 1-A State, 23-8s-32e, Chaves County, drilled ahead below 10,296 ft. in lime. The last core from 10,060-067 ft. recovered 4 ft. of hard black material of possible Pennsylvanian age. Richfield Oil Corp. 2 Comanche Unit, 24-11s-26e, pumped 27 bbl. of fluid in 24 hours, being 75 per cent salt water, from perforations at 6,112-42 and 6,157-84 ft. Retainer was then set at 6,110 ft. and perforations made at 6,080-6,106 ft. with 96 jet shots. After a 2,000-gal. treatment, it swabbed 18 bbl. of fluid in 5 hours. Amount of cut was not reported.

Eddy County.—Magnolia Petroleum Co. 1 Foster Unit, 26-20s-23e, ran casing to 2,050 ft. and was waiting on cement and cable tools for deepening to 3,500 ft. Location is 12 miles southwest of Lakewood. Neil H. Wills 1 Wills, 8-21s-26e, was showing water at 2,230 ft. in sand, and may plug.

Lea County.—Magnolia 1-C Santa Fe-Pacific, 26-9s-36e, on the east side of the

Crossroads field, drilled shale at 8,482 ft. It topped the San Andres at 4,110 ft., Glorietta at 5,400 ft., and Abo section at 7,720 ft., on elevation of 4,030 ft. Mid-Continent 1 Dessie Sawyer, 27-9s-36e, was drilling lime at 9,046 ft. Mid-Continent's 1-B U. D. Sawyer, 34-9s-36e, was below 10,005 ft. in lime and shale. West of the Hobbs field, Phillips Petroleum Co. 1 Shipp, 20-18s-37e, was drilling below 5,240 ft. Stanolind 1-U State, 2-20s-38e, recovered sulfur water on a test from 5,727-80 ft. A test from 5,903-6,105 ft., open 31 minutes, recovered 60 ft. of very slightly oil and gas-cut mud.

SOUTHEAST NEW MEXICO WILDCAT FAILURES

Eddy County: T. E. Boggs 1 Boggs, 5-16s-25e, dry, TD 780 ft. in lime.

Neil H. Wills 1 Crosby, 1-20s-28e, dry, TD 1,449 ft., water 1,192 ft., lost circulation 1,449 ft.

LA.-ARK.

Claiborne Parish Deep Test Cores Smackover Shows

SHREVEPORT.—Hunt Oil Co. et al 1 A. O. Goodwin, deep test 1 mile southeast of the East Haynesville field, in 21-23n-7w, Claiborne Parish, cored additional shows i nthe Smackover, and on last report was coring ahead below 10,156 ft. Top of Smackover porosity was 10,005 ft., on an elevation of 270 ft., and first stain and odor was cored between 10,028-48 ft. Between 10,048-58½ ft., the recovery was fine to medium-grained lime with faint odor and taste. From 10,096-10,111 ft. the recovery was porous lime with good odor and taste, with 1 ft. of shale on bottom. From 10,111-26 ft. the recovery was 7½ in. of porous lime with distillate odor. Faint gas odor and stains were found from 10,126-10,156 ft.

In DeSoto Parish, Carter Oil Co. 1 Brown Paper Mill, 18-11n-13w, had 13 ft. of lime with distillate odor on the bottom of a core from 4,848-96 ft., but a 1-hour drill-stem test of the interval recovered 2,750 ft. of salt water. Robertson Stores 1 Tolson, 1-13n-16w, made new perforations in casing at 5,356-64 and 5,355-63 ft. On a drill-stem test of the perforations it would not flow, and was acidized with 500 gal., then swabbed acid water and salt water for 8 hours, before squeezing. Union Producing Co. 1 Mansfield, 4-11n-11w, cored red shale and sand with streaks of lime with no shows to 7,080 ft., in the Travis Peak. It was coring ahead.

Crescent Drilling Co. 1 C. M. Matthews, Ruston gas field Cotton Valley test, 29-19n-2w, reset packer from 8,968 ft., to 8,535 ft., and flowed gas through 12/64-in. choke. The amount of flow was not reported. Operators were setting up separators. Total depth is 9,389 ft.

In Webster Parish, Barnsdall Oil Co. 1 Robert Sykes, 1-22n-9w, cored hard, gray, porous sand with fair odor and stain from 9,353-9,400 ft. A drill-stem test of the section, open 18 minutes, recovered water cushion and 3 stands of gas-cut mud. Bottom-hole flowing pressure was 1,500 psi. It was to core ahead below 9,400 ft. Hunt Oil Co. 1 R. P. Campbell, new deep operation in the North Shongaloo field, 14-23n-10w, was drilling below 7,603 ft. Projected depth is 11,000 ft. Stanolind and Continental's 1 Viola Mitchell, 31-23n-9w, was coring the Cotton Valley below 10,796 ft., with no shows.

In the Ada gas field of Bienville Parish, Carter Oil Co. 1 Daisy C. Woodard, 2-17n-8w, reported a flow of 159 bbl. of 32°-gravity oil in 23 hours, through 14/64-in. choke, on tubing pressure of 240 psi. It is said to be the first oil production from the Pettit zone in the field. Further details were not available.

In Ashley County, Arkansas, Superior Oil Co. of California 1 Bradley, 11-19s-10w, was drilling sandy shale at 4,165 ft. McAlester Fuel Co. 1-A Polk, 19-15s-20w, in the new College Hill field, Columbia County, was drilling Cotton Valley at 5,014 ft. Stanolind 1 Bodcaw, 29-19s-23w, Lafayette County, cored black shale with no shows at 9,912-18 ft., and continued drilling below 9,920 ft. Stanolind 1 Union Saw Mill, 18-19s-24w, was drilling below 8,925 ft. Carter Oil Co. 1 Ethredge, 20-19s-16w, Union County, was drilling Smackover at 8,831 ft. R. M. Crabtree 1 Bullock, prospective discovery in 30-18s-14w, was still waiting on cable tools for completion tests. S. W. Richardson 1 Shell-Pratt, 36-19s-15w, was coring the Cotton Valley at 8,550 ft.

ARKANSAS WILDCAT FAILURES

Hempstead County: Lee & Burnett 1-A Ollar, SE SE NE 27-13s-25w, dry, TD 5,463 ft.

Ouachita County: Jack Carnes 1 H. L. Berg, NE SE NW 27-13s-17w, dry, TD 4,227 ft., Nacatoch 1,263 ft., base Annona 1,780 ft., Smackover 4,213 ft.

Houston Oil Co. 1 James Boyd, SW NE NW 17-13s-17w, dry, TD 3,400 ft., Annona 1,826-68 ft., Blossom 1,976 ft., Tokio 2,014 ft., Travis Peak 2,256 ft., Smackover 3,306 ft., Eagle Mills, 3,350 ft., elev. 219 ft.

NORTH LOUISIANA WILDCAT FAILURES

Bossier Parish: North American Oil 1 J. Swinney, 5-17n-11w, dry, TD 8,363 ft. in Cotton Valley.

Sabine Parish: Petroleum Drilling Co. 1 S. J. Williams, 27-7n-11w, dry, TD 2,904 ft.

OHIO, KENTUCKY

Stark County May Get Big New Gas Field

COLUMBUS.—The Belden Co. found indications of a new gas pool in the southeast part of Bethlehem Township, Stark County, on drilling in the 1 Ben Willen, Section 23. The white Clinton, at 4,416-41 ft., gaged 1,350,000 cu. ft. of gas and was tubed without shooting. Gas pools in this part of the state usually have a high yield per acre which accounts for the active wildcatting program now in progress.

The south offset to the discovery well on Geo. M. Jones in Section 33, Harrison Township, Perry County, looks like a good oil well. Clinton sand in the well, Ohio Fuel's 1 Frank McCaslin, came in at 3,728-70 ft. and filled up 2,000 ft. with oil. A rig will probably be built before the well is shot.

In the Bladensburg pool, the Preston Oil 1 C. C. Harris, Section 6, Jackson Township, Knox County, a south offset to the 1 Bird Moran, made 87 bbl. in 24 hours after shot. Clinton sand was logged at 2,844-76 ft.

Locations for two wells have been staked in Northampton Township, Summit County. East Ohio Gas 1 Phillips Wheatley, Lot 71, is 1 mile north of the original well, a small gasser, and the Wiser Oil 1 M. M. Vanaman, Lot 53, is 1 mile east of the first well.

OHIO WILDCAT FAILURE

Stark County, Lake Township: East Ohio Gas 1 A. R. Harris, Sec. 19, Clinton 4,300-63 ft., TD 4,476 ft.

WESTERN KENTUCKY

OWENSBORO.—J. C. Ellis and Ashby Drilling Co. have completed two good wells near the eastern border of Daviess County. Ellis and Ashby 8 "A" Allen, 1-N-31, has been completed with an initial production of 150 bbl. per day on pump from the Tar Springs at 627-42 ft. The same operators have completed 7 H. Westerfield, 1-N-31, with an initial production of 60 bbl. per day from the Tar Springs at 612-27 ft.

Two good wells have been completed in Griffiths pool, about 2 miles northwest of Owensboro in Daviess County. J. Tuttle et al 2 Roach, 7-P-28, has been completed with an initial production of 100 bbl. per day, flowing, from a Pennsylvania sand at 996-1,004 ft. Ellis & Damron et al 1 Elder, 7-P-28, was completed in the Pennsylvania at 993-98 ft. for an initial production of 65 bbl. per day.

WESTERN KENTUCKY WILDCAT FAILURES

Henderson County: J. C. Ellis et al 1 Boyd Heirs, SW NW NE 24-Q-26, dry, TD 2,164 ft.

Todd County: Ray Ryan and O. D. Sharp 1 G. Kennedy, SW SE SE 5-C-29, dry, TD 1,228 ft.

Union County: Sun Oil Co. 1 C. Walker et al, SW NE SW 4-N-19, dry, TD 2,824 ft.

Webster County: Ashland Oil & Refining Co. et al 1 Pettus Brothers, NW NE NE 2-L-24, dry, TD 2,661 ft.

EASTERN KENTUCKY

ASHLAND.—On Caney anticline, 12-P-75, Morgan County, Sam Allen et al are drilling at 2,558 ft. at 1 Thomas Richardson. Corniferous lime 1,588-1,905 ft. had only slight shows of oil and gas. Test will be drilled to and into the Knox dolomite.

Pure Oil Co. 1 Rawlings Consolidated is drilling below 3,150 ft. and expecting top of Knox dolomite shortly. Test is located at town of Burning Springs in 5-I-69, Clay County, and is on the Rockcastle River uplift.

In Powell County, A. H. Carpenter 1 James Hall, 9-P-67, western Powell County seismograph location, is drilling below 1,225 ft. Objective formations are the St. Peter sand and the Knox dolomite. California Co. is reported to be supporting test with cash contribution.

EASTERN KENTUCKY WILDCAT FAILURE

Wolfe County: Long & Rice et al 1 Golden Day, 16-O-71, dry, TD 3,393 ft., Tyrone lime 2,505 ft., St. Peter 3,290 ft., water.

INDIANA

EVANSVILLE.—Interest continues in Wilfred pool where new Devonian production was recently opened for Sullivan County. F. B. Cline has completed 1 Leon Wallace, SW NW NE 30-9n-8w, with an initial production of 175 bbl. of oil and 150 bbl. of water from Devonian pay at 2,021-25 ft. George S. Engle has staked four new locations in the area: 1 Kate Drake, SE NW SE 19-9n-8e; 1 Glenn Helman, SW NW SW 20-9n-8w; 1 D. V. Stines, NW SW SW 29-9n-8w; and 1 McAnaly Heirs, SW NE SE 30-9n-8w. Cline is continuing tests of the Devonian at 1 K. Drake, NE NW NW 30-9n-8w. So far, the results of tests have shown: oil at 1,950-56 ft., oil and gas at 2,027-40 ft., oil and water at 2,027-40 ft., and water at 2,047-60 ft.

In North Ford pool, that was opened in July, G. L. Reasor has completed 2 Olus Justus, SE NE NE 15-6s-12w, with an initial production of 125 bbl. per day from the Cypress at 2,233-45 ft. This is a southwest diagonal offset to the discovery well where the initial production was 104 bbl. per day.

Since the opening of McGary pool, Gibson County, in August, with production at George S. Engle 1 John S. Teel, SE SW NW 16-3s-11w, drilling has been active near the discovery well. Engle now has in the area: two wells testing, one cased and waiting on cement, one drilling, and two locations.

INDIANA WILDCAT FAILURES

Gibson County: Joe Hobbs 1 "A" Mauck-Benson, SW SW SE 28-2s-12w, dry, TD 2,609 ft.

Calvert & Willis 1 Lyle W. Smith, SE NE SE 1-3s-12w, dry, TD 2,519 ft.

Pike County: Graham Development Co. 1 G. Roth, SW SW SE 8-1n-9w, dry, TD 1,669 ft.

Posey County: Ashland Oil & Refining Co., Buchman, and O'Neal 1 Fred Damm, SE SE NE 16-5s-12w, dry, TD 2,844 ft.

Sullivan County: William McGill et al 1 Edward Campbell, SE SW NW 25-9n-9w, dry, TD 2,333 ft.

STATISTICS and

WEEKLY WELL COMPLETIONS . . . WEEK ENDED SEPTEMBER 25, 1948

	Total of all wells					Cum.		Wildcat completions and discoveries					Cumulative total, 1948				
	Comp.	Oil	Gas	Dry	Footage	1948	1947	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	28	14	0	*14	31,220	1,129	1,223	0	0	0	0	0	0	0	0	0	0
Pennsylvania	46	19	5	†22	70,986	1,918	2,194	0	0	0	0	0	0	0	9	13	22
West Virginia	10	1	6	3	29,844	591	628	0	0	0	0	0	3	0	34	37	74
Ohio	27	9	8	‡10	82,513	1,003	976	0	0	0	1	1	2	0	9	24	35
Indiana	25	11	0	14	49,642	781	477	0	0	0	5	5	20	0	1	44	65
Kentucky	29	8	6	15	55,986	543	507	0	0	0	5	5	7	0	0	26	33
Illinois	48	27	0	§21	121,840	1,750	1,515	1	0	0	6	7	35	0	1	272	308
Michigan	21	9	4	8	42,675	616	649	0	0	0	5	5	14	0	9	190	213
Kansas	66	30	13	§23	215,745	2,268	1,912	1	0	0	6	7	44	0	5	308	357
Neb., Mo., Iowa	1	0	0	1	3,310	6	4	0	0	0	1	1	0	0	0	5	5
Oklahoma	82	40	9	33	287,067	3,019	3,072	1	0	2	13	16	95	7	24	471	597
Texas	291	182	15	94	1,188,050	8,683	6,709	12	0	4	45	61	257	23	80	1,514	1,874
North Central (Dist. 7-B & 9)	109	50	3	‡56	334,318	2,734	2,166	4	0	1	22	27	93	0	13	552	658
West (Dist. 7-C & 8)	79	66	2	11	406,969	*2,356	1,620	3	0	0	7	10	56	0	3	172	231
Panhandle (Dist. 10)	11	7	3	1	32,685	458	329	0	0	0	0	0	0	0	3	8	11
Eastern (Dist. 5 & 6)	9	3	2	4	63,060	405	390	0	0	0	2	2	9	2	0	84	95
Gulf Coast (Dist. 2 & 3)	30	17	4	9	187,850	1,365	1,168	2	0	3	7	12	60	18	26	327	431
Southwest (Dist. 1 & 4)	53	39	1	‡13	163,168	1,365	1,036	3	0	0	7	10	39	3	35	371	448
Louisiana	59	37	3	19	220,038	1,694	1,091	1	1	0	4	6	38	21	4	157	220
Northern	44	29	3	12	94,359	1,138	621	0	0	0	2	2	3	2	0	78	83
Southern	15	8	0	7	125,679	556	470	1	1	0	2	4	35	19	4	79	137
Arkansas	8	4	0	4	39,637	219	214	0	0	0	3	3	5	0	0	67	72
Mississippi	4	2	0	2	28,968	298	354	0	0	0	2	2	3	1	3	71	78
Southeastern States	1	1	0	0	11,588	41	45	0	0	0	0	0	0	0	0	37	37
Montana	14	9	1	4	30,493	214	209	0	0	0	0	0	3	0	0	15	18
Wyoming	13	6	0	7	62,615	390	176	0	0	0	5	5	20	0	1	48	69
Colorado-Utah	7	4	0	3	38,418	173	149	1	0	0	3	4	1	0	5	35	41
New Mexico	10	6	2	2	30,943	444	395	0	0	1	1	2	*4	1	2	38	45
California	51	41	1	9	175,137	2,128	1,437	1	0	0	8	9	94	1	5	230	330
Total United States	841	460	73	308	2,816,715	27,908	23,936	18	1	7	113	139	645	54	192	3,602	4,493
Total previous week	802	433	60	309	2,762,100	27,067	23,212	12	0	5	111	128	627	53	185	3,489	4,354
Total September 27, 1947	724	392	87	245	2,328,826			12	2	9	87	110	516	69	161	2,942	3,688

Service wells included: *14, †21, ‡2, §1.

CRUDE PRICES AND REFINERY ACTIVITY

GRAVITY SCHEDULES

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity—	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Tex.*	West Tex.†
18-18.9	$2.17	....	....	....
19-19.9	2.19	....	....	....
20-20.9	2.21	$2.25	....	$2.13
21-21.9	2.23	2.27	....	2.14
22-22.9	2.27	2.29	....	2.16
23-23.9	2.30	2.31	....	2.18
24-24.9	2.34	2.33	$2.56	2.20
25-25.9	2.38	2.35	2.58	2.22
26-26.9	2.41	2.37	2.60	2.24
27-27.9	2.45	2.39	2.62	2.26
28-28.9	2.49	2.41	2.64	2.28
29-29.9	2.52	2.43	2.66	2.30
30-30.9	2.56	2.45	2.68	2.32
31-31.9	2.59	2.47	2.70	2.34
32-32.9	2.62	2.49	2.72	2.36
33-33.9		2.51	2.74	2.38
34-34.9		2.53	2.76	2.40
35-35.9		2.55	2.78	2.42
36-36.9		2.57	2.80	2.44
37-37.9		2.59	2.82	2.46
38-38.9		2.61	2.84	2.48
39-39.9		2.63	2.86	2.50
40 and above		2.65	2.88	2.52

*For crude from Daboval, El Campo, and Sand Point. †Includes Lea County, New Mexico. Last general price change represented a 50-cent increase becoming effective December 6, 1947. (For detailed price changes in all fields see The Oil and Gas Journal, January 1, 1948, page 107.)

A.P.I. REFINERY REPORT, WEEK ENDED SEPTEMBER 18

	(Thousands of barrels)					Stocks at refineries, bulk terminals, in transit and in pipe lines			
	Crude runs,	Production							
District—	daily avg.	Gasoline†	Kerosine	Gas & dist. oil	Residual	Gasoline*	Kerosine	Gas & dist. oil	Residual
East Coast	855	2,224	210	1,275	1,531	22,302	11,154	22,830	12,759
Appalachian:									
District 1	102	316	44	99	77	2,288	490	815	400
District 2	30	93	12	38	72	959	107	263	202
Ind., Ill., Ky.	934	3,363	363	1,003	1,022	18,634	4,665	11,623	6,195
Okla., Kans., Mo.	457	1,716	142	545	521	8,167	1,488	6,096	2,458
Inland Texas	251	986	70	200	413	3,323	735	1,119	1,126
Texas Gulf Coast	1,366	4,335	680	2,326	1,493	14,172	3,228	10,863	9,206
La. Gulf Coast	433	1,282	368	623	518	5,465	1,860	3,745	3,135
N. La. and Ark.	82	215	55	103	147	1,989	562	736	291
Rocky Mountain:									
New Mexico	12	43	7	12	27	77	25	52	31
Other Rocky Mtn.	158	450	33	177	204	1,824	299	1,425	1,005
California	(No California figures available because of refinery strike)								
Sept. 18, 1948‡	4,680	15,023	1,984	6,401	6,025	79,200	24,613	59,567	36,808
Sept. 11, 1948‡	4,825	15,373	2,038	6,482	6,828	80,074	23,553	57,355	36,066

*Finished and unfinished. †At refineries including natural blended. ‡Excluding California.

Bureau of Mines crude-oil stocks (excluding California) 200,363,000 bbl. as of September 18—up 1,617,000 bbl. One year ago 222,664,000 bbl.

FLAT CRUDE PRICES

Representative posted schedules per bbl.	
East Texas	$2.65
Kettleman Hills, California*	2.14
Beauregard Parish	2.60
Illinois Basin	2.77
Pecos County, Texas (Yates)	2.35
Bradford, Pennsylvania	5.00
Eastern Ill. and Western Ind †	2.77
Tomball, Texas Gulf Coast	2.83

*37°-37.9°. †35° and above.

TRENDS

DAILY AVERAGE PRODUCTION FOR WEEK

	Sept. 25 crude oil	B. of M. Sept. demand	Sept. 18 crude oil
Alabama	1,400	1,200	1,300
Arkansas	81,400	90,000	83,200
California	769,300	955,000	766,600
Colorado	47,590	50,000	48,760
Eastern	66,000	66,300	62,800
Florida	350	800	800
Illinois	182,400	170,000	179,800
Indiana	26,200	17,000	22,500
Kansas	310,850	307,000	303,550
Kentucky	25,100	24,000	24,500
Louisiana	485,100	500,000	485,350
North Louisiana	114,000	.....	114,250
South Louisiana	371,100	.....	371,100
Michigan	48,000	46,000	46,400
Mississippi	126,800	131,000	125,800
Montana	26,390	27,000	22,830
Nebraska	350	700	350
New Mexico	131,535	138,000	131,535
Oklahoma	429,750	438,000	429,500
Texas	2,470,900	2,520,000	2,470,900
Dist. 1 (Southwest)	28,660	.....	28,660
Dist. 2 (Southwest)	179,950	.....	179,950
Dist. 4 (Southwest)	250,425	.....	250,425
Dist. 3 (Gulf Coast)	494,515	.....	494,515
Dist. 5 (Eastern)	49,150	.....	49,150
Dist. 6 (Eastern)	119,725	.....	119,725
East Texas Field	312,800	.....	312,800
Dist. 7-C (West)	45,300	.....	45,300
Dist. 8 (West)	708,950	.....	708,950
Dist. 7-B (W. Central)	53,275	.....	53,275
Dist. 9 (N. Central)	141,150	.....	141,150
Dist. 10 (Panhandle)	87,000	.....	87,000
Wyoming	161,330	158,000	153,850
Total United States	*5,390,745	5,640,000	5,360,325
Change from prev. wk., up	30,420		

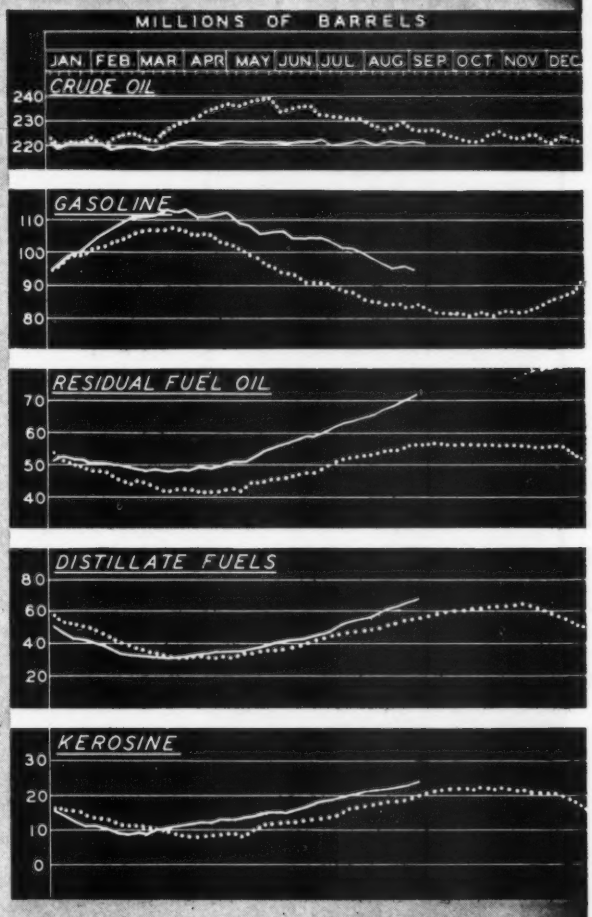
Total production January 1-September 25 †1,475,193,590 bbl.

Same period last year (crude plus cond.) 1,340,543,395 bbl.

*Not incl. 68,440 bbl. condensate. †Incl. 19,919,425 bbl. condensate.

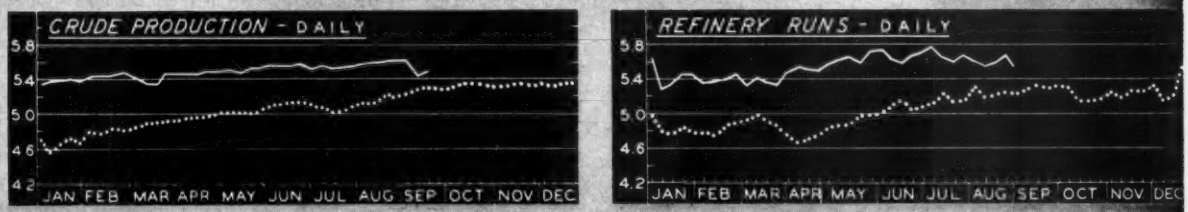
STOCKS IN UNITED STATES

---- 1947 ——— 1948



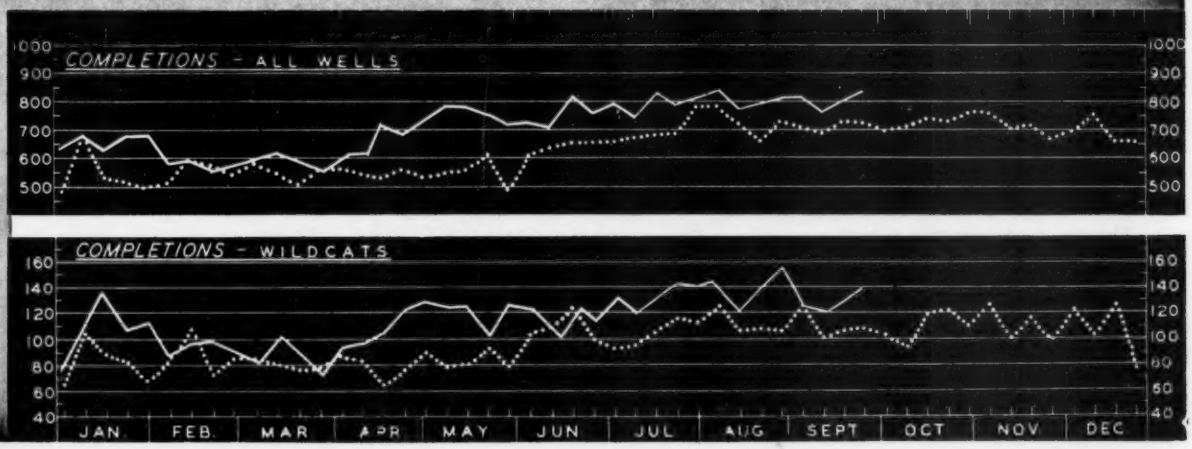
DAILY OPERATIONS

---- 1947 ——— 1948



WEEKLY COMPLETIONS

---- 1947 ——— 1948



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MARKETS

THE effects of the strike involving most of the larger refineries in California which got under way September 4 were apparent in refined markets in several areas over the past week. California and West Coast buying to offset the deficits in supply in that area was of sufficient volume to firm or strengthen markets over a large part of the United States.

When the California strike started it was assumed that it would be of brief duration. Plants representing approximately 70 per cent of the state's 1,000,000-bbl. refining capacity were initially shut down. There has been some resumption of operations and other plants have increased their runs to stills and it is now estimated that California refinery operations are about two-thirds their normal runs of about 900,000 bbl. daily. This still leaves a deficit of approximately 300,000 bbl. daily on the West Coast and suppliers are now endeavoring to obtain this quantity from other areas.

Gulf Market Strengthened

Reports showed that California orders were being placed directly with Gulf Coast, Mid-Continent, Rocky Mountain, and Caribbean refineries. In the Gulf Coast a shipment of 100,000 bbl. of gasoline was lifted and orders for two more tankers were placed for immediate shipment. This improved the spot market for gasoline in that key area and quotations ranged from 10½ to 11½ cents for regular gasoline and 11¼ to 12¼ for premium gasoline. These represented increases of ¼ to ½ cent, ending a weak market situation in which the price trend on spot material has been downward for several weeks. The kerosine market also improved ¼ cent in Gulf Coast quotations with limited supplies offered.

The Gulf Coast heavy fuel-oil market was still listed as "weak" at a price range of $2.35-2.45 per barrel with no change in No. 2 furnace oil at 9 to 9½ cents.

Most Products Firm

In the Mid-Continent there were no general price changes in the light and heavy products but observers were in agreement that the market was firmer than it has been in several weeks. A few shippers were participating directly in the California buying and indirectly these West Coast purchases have aided all products with the possible exception of No. 6 fuel oil which is in excess supply. However, there were fewer distress sales of the heavy fuels reported and the general market level continued at a minimum of $2.00 per barrel. It is reported that railroads' spot buying this month and next is to be at the $2.00 level in Oklahoma.

In the Mid-Continent and the Middle West some stiffening in the range oil and No. 1 furnace-oil market was reported. Spot buying and shipments on contract has also improved in the No. 2 grade. It is said that many buyers of distillate and gasoline who have been staying out of the market as much as possible owing to the lower price trends are now concerned about the situation created by the California shortage and are resuming purchases. There continues to be weak spots in the heavy fuel-oil market in the Middle West.

The price trend in lubricants continues downward where any changes have been made. It is pointed out that domestic and export prices for Pennsylvania Grade lubricants have reached the point where they are working a hardship on several refiners.

Representative Quotations

Representative spot-market quotations of leading suppliers as of September 27, 1948. Figures are f.o.b. plant for tank-car shipment in cents per gallon, except for residual fuel oil which shows the price per barrel and wax, in cents per pound.

GASOLINE, KEROSINE, AND FUEL OILS

	Mid-Continent Group 3	New York Harbor	Texas Gulf Coast
Regular gasoline, 73-75 octane	10¼-10½	11.6-12* 10.5-11.9†	10¼-11
Premium gasoline, 78-80 octane	11-11¼	10.6-13.4	11-11¾
42-44 w.w. kerosine	9½-9¾	10.3-11.7	9½-10¼
No. 2 straw fuel oil	9-9¼	9.4-10.1	9-9½
No. 6 residual	$2.00-2.20	$3.03-3.37	$2.10-2.65

*Branded (74-76 octane); †Unbranded (74-76 octane).

NATURAL GASOLINE

	Group 3	North Texas	N. La.
Grade 26-70	8½	8	8¼
Grade 18-55	10.2	9.6	9.9

LUBRICATING OILS

South Texas

200 vis., No. 2-3 neutral	12-14.5
750 vis., No. 3-4 neutral	15-17.25
2,000 No. 5-6 neutral	17-21

LUBRICATING OILS

Mid-Continent

150-160 vis., D bright stock, 0-10 pp.	33
200 vis. No. 3 neutral, 0-10 pp.	19

Western Pennsylvania

145-155 vis. 10 p.t. bright stock	47
180 vis. p.t. neutral	45

CRUDE-SCALE WAX

Mid-Continent

132-134 A.S.T.M. melting point	6

EQUIPMENT MEN ... in the News

Four Wheel Drive Elects Officers

Stockholders of Four Wheel Drive Auto Co. have unanimously reelected as directors Robert A. Olen, the company's general manager; A. A. Washburn of Horicon, one of the original investors in the company; and Samuel N. Pickard, president of National Manufacturers' Bank of Neenah. The men will serve for terms of 3 years.

At the organizational meeting of the board which followed all officers of the company were reelected: Walter A. Olen, president; Joseph D. Cotton, vice president; David J. Rohrer, vice president; Donald S. DeWitt, vice president; R. H. Schmidt, vice president in charge of sales; Robert A. Olen, general manager; S. H. Sanford, secretary; and James A. Driessen, treasurer.

Union Iron Appoints Eastern Representative

Chemical Pump & Equipment Corp., 75 West Street, New York, has been appointed to represent the process equipment department of Union Iron Works, Erie, Pa. Territory covered is all of New York east of Rochester and western Connecticut.

Technical Service Represents Cypher System

Cypher Systems, Inc., Long Beach oil-well electrolysis control firm, recently appointed Technical Service Co. as its exclusive California representatives. Technical Service Co. was organized by Warren Woodruff, president, in May 1946 to handle products of a technical nature for the producing departments of the industry. The organization is composed of service manager, Tom Homer with headquarters in Los Angeles, and Henry Dobie at Bakersfield.

A. E. Lemke has been added to the sales and service force at Long Beach.

J. B. Peddy has been transferred from the sales and service department at Houston to Oklahoma City, as district manager. He is assisted by O. C. Wright and R. D. Warden, sales and service engineers.

B. W. Morgan has taken over the managership of the Lafayette, La., district, where he has worked for some time as a sales and service engineer. He is assisted by Robert L. Perkins, sales and service engineer.

Quentin B. Marsh, formerly in the Sun Oil Co.'s production department in Illinois, has been placed in charge of new Telefloodmeter operations. This work is in connection with water flooding on secondary-recovery projects. Marsh is also acting as district representative in charge of rental sales and service at Crossville, Ill.

Robert E. Keyes has been added to the sales and service force at Odessa, Tex.

W. F. Krueger has been placed in charge of all Houston sales and service. He is assisted by J. V. Evans, J. I. Murph, and E. J. Blackburn, sales and service engineers.

Taylor Forge Names Vilsack

Robert M. (Bob) Vilsack has joined the sales department of Taylor Forge & Pipe Works, reporting to the main plant at Chicago. The company also operates extensive properties at Carnegie, Pa., and Fontana, Calif. Vilsack was recently associated with M. W. Kellogg Co. of New York in engineering and sales work.

Ajax Makes New Appointment

A. W. Nash Co., Los Angeles, has been appointed Southern California representative of Ajax Flexible Coupling Co., Inc., according to an announcement by Wayne Belden, vice president of Ajax.

A. W. Nash Co. is taking over the Ajax account from Howard Speddy, who is retiring from business after a long career in handling Ajax and other industrial products throughout the Pacific States.

A. W. Nash Co. will handle all Ajax products including the complete line of Ajax flexible couplings, vibrating conveyors, screens, shakers, and packers.

Store Managers Appointed

Continental Supply Co. has transferred F. Vincent, former floorman at Lake Charles to Eunice, La., as store manager succeeding R. E. Scheibel. The latter has been transferred to Lake Charles as store manager, succeeding V. U. Pennell, who has resigned. P. D. Stearns, former bookkeeper at Monahans, Tex., has been appointed store manager at the same location, succeeding J. T. Green who has been transferred to the Rocky Mountain district.

Chain Belt Appoints Continental

Chain Belt Co., Milwaukee, has announced the appointment of Continental Supply Co. as a distributor for its oil-field chains. Stocks of both Rex A.P.I. chains and Baldwin-Rex roller chains will be available at all Continental Supply Co. store points.

Aero Appoints O'Malley

Thomas M. O'Malley has been named project engineer by Aero Service Corp. for its mapping-magnetometer survey of Portuguese East Africa for Mozambique-Gulf Oil Co. He will direct the operations of the Philadelphia company's 15-man staff of pilots, photographers, electronic engineers, and technicians who will perform the survey of the oil company's large concession area. O'Malley has been associated with Aero Service Corp. since 1936.

Ives to Represent Fisher

Clifford B. Ives & Co. has been named Fisher district sales representative in southern New Jersey and eastern Pennsylvania. Address of the new sales office is 1500 Walnut Street, Philadelphia.

Cliff Ives, who heads the new company, has had wide experience in the control-valve and regulator field. Ives resigned his position as chief engineer with a prominent control-valve manufacturer to organize his new sales company.

Dresser Industries Wins Oscar

In the final ratings of an independent board of judges for the Financial World annual report survey, Dresser Industries, Inc., Cleveland, was judged as having the best 1947 annual report for the fourth consecutive year.

The bronze "Oscar of Industry" trophy will be presented to Dresser Industries, Inc., at the annual awards banquet in Hotel Pennsylvania, New York, on October 21, 1948.

More than 4,000 corporation annual reports were submitted in this national survey, the eighth in the series,

and these were judged in 100 industrial classifications for "Best of Industry" awards.

Territory Changes Made by Sperry-Sun

Sperry-Sun Well Surveying Co. announces the following personnel changes:

Steve W. Gurasich, formerly Long Beach district manager, has been moved to the Philadelphia office to engage in development work.

Harry M. Lowe, formerly district representative at Bakersfield, has been moved to Long Beach, where he is acting in the capacity of California district manager.

Karl C. Clark has been assigned the position of district representative at Bakersfield.

Lebanon Acquires British Casting Process

Secret British super-alloy casting processes developed by Firth-Vickers Stainless Steels, Ltd., of Sheffield, England, have been acquired by Lebanon Steel Foundry, Lebanon, Pa., and will be made available immediately for use in the production of vital turbojet engine components required in the $500,000,000 U. S. military aircraft engine program.

Pennington Addresses Houston Nomads

Tucker Pennington, Humble Oil & Refining Co., was principal speaker at the September meeting of the Houston Nomads which was attended by 75 Nomads and guests. Pennington talked on offshore operations, his talk being illustrated by drawings and photographs of one of the Humble company's large drilling platforms. Three new Nomads, Jack Clemens of Martin-Decker, James W. Bozeman of Tuboscope, and Leon Huebel of Baroid, were introduced and inducted by Herschel Wood. Several foreign visitors attended the meeting.

Snyder Company Represents Kieley & Mueller

Appointment of Charles W. Snyder Co., Inc., Tulsa, as Mid-Continent distributor for Kieley & Mueller automatic pressure and level controls has been announced.

Charles W. Snyder was originally vice president and general sales manager of Hanlon-Waters and McAlear Manufacturing Co. of Tulsa, when the two were affiliates of Climax Manufacturing Co. He subsequently entered the equipment business in Chicago and later formed his own corporation, opening offices at 1001 North Wheeling Street, Tulsa, in July of this year.

Rockwell Appoints Dixon

L. A. DIXON

W. F. Rockwell, Jr., president, Rockwell Manufacturing Co., has announced the appointment of L. A. Dixon to the vice presidency of the company's meter and valve divisions. Dixon started at Pittsburgh Equitable Meter Co., now a division of Rockwell Manufacturing Co., in 1926, as assistant to the president.

Later, he was president of Pittsburgh DuBois Co., manufacturers and distributors of gas meters. When that company was acquired by Rockwell Manufacturing Co., he continued to serve in the same capacity until recently, when he relinquished that position to accept the new assignment.

New Casper Office

To facilitate servicing the Rocky Mountain district for Black Magic oil-base drilling fluid, and for Koebelite diamond core bits and barrels, Oil Base, Inc., Compton, Calif., has moved its offices from Vernal, Utah, to Casper, Wyo. A. K. "Deacon" Brown is in charge of the Casper office, supervising mud and diamond-coring programs in Wyoming, Colorado, Utah, Montana, and wherever developments require personal attention.

American Car Appoints Ginna

J. F. Ginna has been appointed assistant to the vice president in charge of production of American Car & Foundry Co., and will handle the scheduling and coordination of production. Ginna, who has been associated with A.C.F. for over 30 years, was born and educated in Brooklyn.

Falcon Products Announces Change

H. F. Schlittler, formerly vice president of Falcon Products, Inc., has left the organization.

Heading up the Falcon management are A. R. Loud, president; L. A. Theisen and W. G. Wellington, vice presidents, and T. A. Needham, secretary and treasurer.

Falcon Products policies and field distribution of its slush pump liners, rods, pistons, and other components will remain the same.

National Foam Acquires "Drench"

National Foam System, Inc., Philadelphia, foam fire fighting manufacturers, announces the purchase from Arnold, Hoffman & Co., Inc., Providence, of its good will, patents, formulas, and trademark covering the wetting agent known as Drench.

Drench which penetrates deeper than water and 1 per cent of which doubles the effectiveness of ordinary water in extinguishing fires, will be immediately manufactured at National Foam System's principal plant at West Chester, Pa.

Shafer Appointed Publicity Manager

Russell T. Shafer has been appointed as manager, publicity division, Westinghouse Air Brake Co., Wilmerding, Pa. He succeeds James A. Ralston who has held the position since 1920 and retired September 1.

Shafer was employed by the company in 1926 in the auditing department and was transferred to the patent department in 1934. He became associated with the publicity department in March of this year as assistant manager.

(Continued on page 153)

Foreign visitors at Houston Nomads' September meeting were: Kraus Earhart, Texas Co., Houston; Delvert Lewis, Foreign Exploration Co., Venezuela; S. Priulli, Jr., Cia. Itatig, Brazil; Glenn Byers, Shell Oil Co., Inc., Houston; H. Pallares, Equadorian Counsel, Houston; L. H. J. Hirch, Caribbean Petroleum Co., Venezuela; Orlando L. Prioli, Cia. Itatig, Rio de Janeiro, Brazil; A. J. Pounds, U.B.O.T., Trinidad; H. R. George, Shell Oil Co., Inc., England; R. S. Schols, B. P. M., Holland; H. Swolfs, B. P. M., Holland

Classified Advertising

The Market Place for the Oil Industry

UNDISPLAYED

All ads, 12 cents a word. Minimum charge, $3.00 per insertion.
Centered Line, any ad, $1.00.
Box Numbers count 9 words when replies are to be sent to our Tulsa Office. Replies forwarded without charge.

DISPLAYED, PER INCH

$12.00 per column inch per insertion. One-point border and 12-point capitals are allowed. Larger type sizes not accepted.

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10% Discount if 3 insertions are ordered at one time.
COPY DEADLINE, 9:00 a.m. Monday prior to each week's issue.

THE OIL AND GAS JOURNAL
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EQUIPMENT FOR SALE

PIPE FOR SALE: 2000′ of 20 lb. and 2000′ of 17 lb. 6⅝″ I.D. casing. Take all at $2.25 per foot. 312′ of 8″ I.D. 28 lb. @ $3.00 per foot. Would trade for 4⅞ or 6¼ casing. Boyer Oil Co., Box #35, Iola, Kansas.

SHOT HOLE DRILLS
LARGE AND SMALL

All are truck mounted, rotary, chain pull down, smallest pump size 3½ x 5. Some are in excellent condition, others need repairs. Price FOB Dallas from $3,000.00 to $8,000.00 including truck. For details write 8800 Lemmon Ave., Dallas 9, Texas.

1—J L 1335 BUDA GAS ENGINE. Completely overhauled and guaranteed. With or without engine starter and clutch power take off.

2—E K U Waukesha gas engines. Completely overhauled and guaranteed. One has engine starter.

3—E K U Waukesha gas engines. Mounted on steel rig drive skids. Good running condition.

2—Superior Model ORD 6-cyl. Diesel engines. Complete with skids, output clutch, radiators, and all standard equipment. Excellent condition.

EMPIRE MACHINERY COMPANY, LTD.
Odessa, Texas—Pho. LD 18
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WE BUY and SELL

Steel Pipe and Tubing
Pipe Fittings—Well Casing
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SONKEN-GALAMBA CORP.

2nd & Riverview, Kansas City 18, Kans.

EQUIPMENT FOR SALE

FOR CABLE TOOLS
DEGEN PIPE AND SUPPLY CO.
Box 107, Red Fork Station, Tulsa, Oklahoma

FOR SALE Wilson Master Model Winch powered by 6 MZR Waukesha engine. Unit mounted on one and one-half ton Chevrolet truck equipped with fifty foot single pole telescoping mast. Terms. Melton Supply Company, Seminole, Oklahoma.

USED Le Roi 6-, 8-, and 12-cylinder gas engines, complete and in A-1 condition for oil industry power. Priced to sell. Also one Model NKU Waukesha $1500. Write or call today. General Machine & Supply Company, P. O. Box 72, Wichita Falls, Texas.

FOR SALE: Good used cross reaction chamber. 46″ OD by 38″ ID by 41′ 2″ long, located at Malco Refineries, Inc., P. O. Box 660, Roswell, New Mexico.

FOR SALE: Brand new 1948 Bucyrus Erie 36-L, trailer mounted, latest model, has never turned a wheel. 15″ to 5½″ tools; Wilson elevators; new 4 cylinder light plant; new blower and forge; 100′ of 12″ pipe, 900′ of 10″, 1700′ of 7″; 1900′ of 5½″, all seamless; 8 round thread; new ⅞ drilling line; new ⅝ sand line; casing spider—fishing tools. G. W. Miller, 706 Cherry St., Mt. Carmel, Ill., Telephone 166-J.

DRILLING equipment, reconditioned ready for delivery, Failing, Franks, Ell Tulsa, Longyear, American, Sullivan, Fort Worth, Wichita, Keystone, National, Standards. Also steel derricks, cable tools, cable and good used casing, most sizes. Pressey & Son, Pueblo, Colo.

RADIO TRANSMITTER AND RECEIVER General Electric Type TCK-4. Two complete units with spare parts. 100 Watt (voice), Range 2000 to 18,100 Kc.

LUCEY PRODUCTS CORPORATION
Tulsa, Oklahoma

EQUIPMENT FOR SALE

PIPELINE Construction Equipment for Sale: Pipe cleaning machine with priming head, traveling or stationary, 6″ to 12″, excellent condition, $1,350. Two T40 International tractors with pipelayer attachments. good condition, very cheap. Contact C. W Sternberg, 8250 Wier Drive, Houston, Texas Phone Preston 7043.

ONE doubledrum skidmount pipe pulling winch. 4,000′ ¾″ line capacity. Jerkline and cathead attachment. White motor powered One 1943 GMC six-by-six truck equipped with winch. All in A-1 condition. Biehl Producing Co., 108 Seventh St., Marietta, Ohio Phone 1075-M.

FOR SALE: Three Jumbo "J" Spudders, complete with tools, tool houses, long shear poles, light plants and drilling lines. These Spudders are in A-1 condition and are now in operation. Our reason for selling is to get into the Rotary business. One available now, another will be available in 15 days and the third will be available in 30 days. Cactus Drilling Co., 1007 McBurnett Building, Box 348, San Angelo, Texas.

ONE 23 KW Natural gas engine generator unit, new and unused 1948 Model R9A12 Ready-Power 120/208 volt 3 phase 4 wire 60 cycle, securely bolted to form one rigid assembly complete with automatic voltage regulator, voltmeter, ammeter, etc. Price $3245.00 f.o.b. Detroit, Michigan. Contact Panhandle Eastern Pipe Line Company, 1221 Baltimore, Kansas City, Missouri, for additional information.

FOR SALE: #55 Clark Wichita Falls spudder mounted on 40 x 12 rubber tires—ball bearings. Price $4,000. McCarthy Well Company, 670 Eustis Street, St. Paul, Minnesota. Telephone NEstor 7566.

FOR SALE: One 36-L Bucyrus-Erie Spudder. Phone 3-7810, 1109 Euclid, Oklahoma City, Okla., F. D. Bridges.

FOR SALE: Two Kewanee and one Broderick 126 hp. 300 lb. W.S. steam boiler. Located Oklahoma City. Harry D. Mach, phone 62-6143, 3109 NW 14th St., Oklahoma City, Oklahoma.

MURPHY DIESEL, ME-66

Brand New—Sacrifice—At OEM's Cost 1103 cu. in., 6-cylinder, 180 HP, @1200 RPM. Never been used. 20% off list. Contact: Box C-613, The Oil and Gas Journal, Tulsa, Oklahoma.

for SALE

OIL RIGS

WILSON SPLIT GIANT RIG

Emsco jack-knife derrick, steel sub-structure.
2 12-cylinder Le Roi engines.
16-inch Gardner-Denver pump.

BETHLEHEM 50 RIG

Lee C. Moore jack-knife derrick.
1 W. A. K. Waukesha engine.
14-inch Bethlehem pump powered by
1 6NK Waukesha engine.

Both Rigs Complete with All Necessary Tools and Equipment In NEW Condition

Available for Immediate Delivery

FOR INFORMATION, CALL OR WRITE

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Phone Central-1369

EQUIPMENT FOR SALE

FOR SALE: Wilson Mogul draw works, powered by G.A.K. Waukesha engine. Good condition, priced for quick sale. Terms. Melton Supply Company, Seminole, Oklahoma.

FOR SALE: Wilson Super Model Winch powered by 6 MZR Waukesha engine. Terms. Melton Supply Company, Seminole, Oklahoma.

A REAL VALUE
EMSCO PDM 46 DRILLING UNIT

1—PDM 46 Emsco Drilling Unit Powered with Two (2) D 17000 Caterpillar Diesel Engines, 7¼" x 14" Gardner-Denver Power Pump, Type H Emsco Reverse Clutch, B 6 Emsco Swivel, 54" 4 Sheave Emsco Traveling Block, N 15 Emsco Oil Bath Rotary Table, Y 15—5 KW Light Plant, 7' x 12' American Steel Tool House, 87' Lee C. Moore Cantilever Jackknife Mast, complete with tools, fittings, tongs, slips, elevators, etc., less drill pipe and drill collars. Located Western Kansas, priced to sell—$28,500.00 F.O.B. Location. Inventory and location upon request. H. A. McCarthy, 310 Thompson Bldg., Tulsa, Oklahoma. Phone 5-3296.

FOR SALE—One #45 Heavy Duty Fort Worth Spudder complete with tools to drill 5,000' hole. Write Joseph J. Snyder. 209 Stewart St., Carmi, Illinois.

FOR SALE: One late model Cleveland Trencher with 14-in. buckets. Price $9,000.00. Phone 2-4261, Oklahoma City, Oklahoma.

FOR SALE: Two No. 2 National Drilling machines, complete with tools and Riise motors. Call or write C. J. Hughes, Phone 1983, Box 1151, Logan, West Va.

FOR SALE

Two Diesel Generator Rotary Drilling Rigs, one Waukesha Powered Rig. Complete inventory and prices on request.

CITIES SERVICE OIL COMPANY
Mr. Patridge, Bartlesville, Oklahoma

TANK CARS FOR SALE

75—8,000 GAL. CAP. CLASS 3, 80,000 LB. CAP. TRUCKS. NOW IN SERVICE—EXCELLENT CONDITION.

DARIEN CORP.
60 E. 42nd St., N. Y. 17, N. Y.

FOR SALE

12—230 H.P. Type 10 Bessemer New 17 Power Cylinders complete ready to ru with 16" to 18" Compressors. 1—230 H.I Clark Horizontal with Compressors. Lo cated Salem, Illinois.

ENGLE PETROLEUM, Incorporated
Box 655, Evansville, Indiana

MANUFACTURERS LATEST DESIGN

Hydraulic Casing Pulling Units. Complete line of equipment. Units made to your specifications. Truck Mountings or Skid Units. Repair Service and Parts.

OKLAHOMA MACHINE & SUPPLY CO.
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PARTS FOR ARMY TRUCKS

New and Used

Largest stock in America, 6x8, 6x4, 4x4 4x2. All items guaranteed. Largest auto wrecking house in the west with most complete stock of new and reconditioned parts for all cars and trucks. New jeep power units complete with radiators and stub shafts. Fast service.

PIONEER AUTO WRECKING CO.
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EQUIPMENT FOR SALE

FOR SALE: Cardwell Drawworks, Model "L"—Air Clutches—A-1 Condition. Box 3246, Corpus Christi, Texas.

FOR SALE at our Seminole, Okla., Production Camp: 1—Used Cardwell Model KS-DHS Single Drum Skid Well Servicing Winch bought new 1935, Driven Through Jack Shaft by DHK Waukesha Motor and Mounted on GMC '37 Model, 178" Wheelbase Truck. No tools or mast. $2500. Cities Service Oil Co., Patridge, Bartlesville, Okla.

FOR SALE: BREWSTER N-4 ROTARY RIG

Complete, 4500' 3½" drill pipe, Lee C. Moore 87' jackknife derrick. All practically new. Invoice price.

M. E. ROBERTS
421 Giddens-Lane Bldg. Shreveport, La.

TOWERS, ENGINES, AND PUMPS

1. FRACTIONATING BUBBLE TOWER 5' 6" dia. x 79' 0" long with 28 bubble trays complete with C.I. bubble caps. Ten manways and covers, ladders and man guards. In good condition.
2. CLAY TOWER — approximately 6' 0" dia. x 35' high ¾" wall.
3. CLAY TOWER FRACTIONATER—6' 0" dia. x 25' high x ¾" wall.
4. JOSEPH REID ENGINE—size 11½" x 14". Twin which is a driver for National Transit Hot Oil Pump size 4½" x 12". Good for 800° F. Pump has 4-6% chrome cylinders and alloy plungers. In excellent condition.
5. NATIONAL TRANSIT PUMP — size 5½" x 18". Hot heavy oil service equipped with 4-6% chrome cylinders and plungers. A new set plungers for pump in stock.

Technical data available on request.
Inspection invited. Immediate delivery.

MID-WEST REFINERIES, INC.
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EQUIPMENT FOR SALE

BUCYRUS-ERIE—24L Drill Rig, Trailer Mounted; over 5000 feet line; 2 strings of tools 4-inch to 10-inch; 2½ Ton G.M.C. Tandem Dual Truck with detachable A-Frame and winch; 8-ft. x 10-ft. metal tool shed; Kohler Light Plant; 470-ft. new 10-inch wrought iron pipe; some used 6 and 8-inch pipe; good assortment of all necessary tools and equipment. All in A-1 condition. Sell as a whole or part. Lealand West, Telephone 4931 or 4391, Scottsburg, Indiana.

FOR SALE

SPARTA Steel Spudder with Buda Engine, capable 2500', and good string tools from 12" down.

—o—

WELL complete, everything new year ago. 3600' deep. SS 14# 5½" casing, 2" EUE SS Tubing, 346 F-M Engine, Emsco Unit. Production depleted reason for selling.

—o—

CABLE TOOLS, string from 18" down. D13000 Caterpillar Engine and Climax Clutch. Underreamers, fishing tools, good stems, bailers, and bits.

C. ERNEST LIGGETT, Drawer 631, Russell, Kansas.

BARGAINS FOR SALE
100 KW. DIESEL ENGINE GENERATOR SETS

15—100 KW. 120/240 V.D.C. Delco Generators dir. con. to 150 HP., Model GDB-8, 5½x7, 8 cyl. Superior Diesel Engines, electric starting with muffler, power panel and accessories.

2—100 KW Delco 220/440 v. 3 ph. 60 cy. AC Units same as above.

PRACTICALLY AS GOOD AS NEW ONLY USED FOR SPARES

Duquesne Electric & Mfg. Co.
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FOR SALE AT REASONABLE PRICE

Used Ingersoll-Rand, type XVG, Compressor with 13½" Bore x 12" Stroke, Low Pressure Cylinder, 5½" x 12" Stroke High Pressure Cylinder, driven by 165 HP @ 350 RPM 11 x 12 bore and stroke, 4 cycle 4 cyl. "V" type Engine, complete with Water Pump, Magnetos, Air Filter and Heat Exchangers, also including Air Starting Unit consisting of Ingersoll-Rand 2 stage Compressor driven by Wisconsin Air Cooled Engine.

The NATIONAL SUPPLY COMPANY, Fort Worth, Texas

2—74,000 Bbl. Cap. 140'x40' Vertical Steel Storage Tanks

A-1 Condition Clean. Immediate Delivery at Morgantown, W. Va.

Darien Corp., 60 East 42nd Street, New York, N. Y.

USED STEEL TUBING

Ideal for Gas Lines

95,000 ft.	1½" O.D.	9 gauge wall (2 lbs. per ft.)
120,000 ft.	2" O.D.	11 gauge wall (2 lbs. per ft.)
60,000 ft.	2¼" O.D.	11 gauge wall (2¼ lbs. per ft.)
30,000 ft.	3¼" O.D.	10 gauge wall (4½ lbs. per ft.)
80,000 ft.	4" O.D.	10 gauge wall (6 lbs. per ft.)

Single or Double Random Lengths—Plain Ends
Beveled for Welding
All Walls and Weights Are Approximate
Write—Wire—Phone

SONKEN-GALAMBA CORPORATION
2nd and Riverview (X-338) Kansas City 18, Kansas
THatcher 9243

EQUIPMENT FOR SALE

ROTARY DRAWWORKS for shallow drilling, Wilson Power Rig, small size, has six-inch width brakes, 6-Cylinder International motor, unitized steel skids, telescoping 65′ mast, all on long 20′ steel skids with unitized place for rotary table, price $4800.00. C. M. Barrington, Coleman, Texas.

FOR SALE: 360 ft. 8¼ I.D. 28 lb. Used Casing. J. M. McDowell, Phone 151-R, Robinson, Illinois.

FAILING model 44, new tires, radiator, and motor in truck, 4½ x 5 Pump, Automatic chuck. Box 1832, Casper, Wyoming.

FOR SALE: Three (used) Bessemer Gas Engines—Type X—165 H.P. Compressor Cylinders 18⅛ x 20 & 16¼″ x 20″; Four Watts Miller Gas Engines 225 H.P. Twin Hor. 19″ x 24″ Power Cylinders—18 & 16″ x 24″ Comp Cylinders; Twenty-four—Clark Single Engines Driven Compressors-Units Power Cyl. 16″ Compressor Cylinders, various sizes, 15″-16″ & 7¼″. All units in Oklahoma City. Contact: Emco Equipment Co., 1334 First Nat'l Bld'g, Oklahoma City, Phone 7-6607.

FOR SALE
COMPLETE ROTARY OUTFIT
including a 57′ semi trailer mounted mast good for drilling to 2500 feet. A 66′ tubular steel derrick good for drilling to 5000 feet . . . Fast twin engine draw works . . . 50 Ton BJ hook . . . Oil bath table . . . Approx 3000′ of 3½″ full hole and 4500′ of regular Hughes tool joints . . . Two Gardner-Denver slush pumps . . . Shale shaker . . . One heavy duty diesel 3 axle tractor truck with heavy duty winch and "A" frame . . . One heavy duty gas 3 axle tractor truck and two 2 axle semi trailers . . . One 1½ T water tank truck . . . fuel tanks . . . sand line hoist . . . light plant . . . Drill collars, subs, core barrels, weight indicator, tongs and all other tools to make the outfit complete . . . All this equipment is modern, in good working condition and ready to go.
Also one light geophysical drilling outfit complete.
LOUIS H. SCOTT
Chino, California, P.O. Box 217
Phone LYcoming 8-2571

OVERSHOTS—Two American Type L, one single bowl, one double bowl. Top connections are for 4½″ full hole drill pipe. Many extra parts. Beardmore Drilling Company, 606 Petroleum Bldg., Wichita, Kansas.

WE have available oil well casing, line piping, upset tubing. Allied Sales Company, 507 Market Street, San Francisco. Wire—write—phone Yukon 6-3864.

FRANKS SUPER-SENIOR Well Servicing Unit, with 53′ mast, on International D-50 Truck. Good Condition. $3,000. Box C-608, The Oil and Gas Journal, Tulsa, Oklahoma.

CENTRAL PUMPING UNIT: 150 HP Reid gas engine, combination compressor. 22′ band wheel double eccentric, pulled 18 wells 3800′. Practically new equipment A-1 condition, located East Texas. Walter Guebert, 4138 McKinney, Dallas, Texas.

FOR SALE at Pampa, Texas, 30 used Type OB-36 Ideal Throwoffs with covers, figure H-363-D National Supply catalog, $35.00 each. Cities Service Oil Company, Patridge, Bartlesville, Oklahoma.

EQUIPMENT WANTED

WANTED
96′ or 97′ Lee C. Moore Cantilever Mast. B & B Drilling Company, Box 309, Pauls Valley, Oklahoma.

HELP WANTED

NEED EXPERIENCED SAMPLE MAN and well geologist, familiar with Oklahoma geological sections. Box C-614. The Oil and Gas Journal, Tulsa, Oklahoma.

OIL Industry Employment Service, 319 Castle Bldg., Tulsa, Okla. Tom Robinson, Mgr. phone 4-5974. No fees to pay. Needed in Persian Gulf area, Middle East. Assistant to Drilling Superintendent with Mechanical Engineering degree $600. Production and Petroleum Engineers $450 to $650. Division Pipe Line Superintendent, salary open. Rotary drillers $480, age limit 55. Derrickmen $420, age limit 26 to 35. All must be experienced. Write for details. Domestic: Civil Engineer with oil company land department experience under 35. Experienced landman college training under 35.

HELP WANTED

MAJOR oil company desires experienced Seismic Interpreter, preferably with Party Chief experience. Permanent location in Division Office, Fort Worth, Texas. Salary open. Address: Box C-592, The Oil and Gas Journal, Tulsa, Oklahoma.

HELP WANTED

SALES ENGINEERS
Experienced in selling refinery process and storage vessels and/or gas compressing equipment. Address Manager of Sales, The J. B. Beaird Company, Inc., Shreveport, Louisiana.

FOREIGN EMPLOYMENT
in
SAUDI ARABIA

ENGINEERS—MAINTENANCE ENGINEERING: ME'S, EE'S, CE'S:
Must have 4 to 5 years maintenance experience; refinery or process plant experience desirable but not required. Will staff maintenance engineering group charged with upkeep and repair of oil facilities and camps.
FEW OPENINGS FOR ASSISTANT ENGINEERS WITHOUT ABOVE EXPERIENCE.

POWER ENGINEER and ASSISTANT: EE'S:
Graduate engineers with wide experience in power generation and distribution to supervise installation and operation of 20,000 kw. power plant and power distribution system.

CHIEF INSPECTOR: ME:
Requires intimate knowledge and extensive experience with HP boilers, pressure vessels, refinery equipment.

ENGINEERS—PROCESS AND CHEMICAL: CHE'S:
Must have 5 years experience assigned to chemical engineering problems and refinery processes.

OPERATORS
Production, Gas Oil Separators, Topping Still, Natural Gasoline Plant and Auxiliary Power Plants.

Career employment opportunities for experienced Engineers, highly skilled Technicians and Craftsmen. Board and room furnished. Vacations in United States with salary end of each 24-month period. Benefit plans.

If interested, apply by letter, giving complete employment and personal history.

ARABIAN AMERICAN OIL COMPANY
200 Bush Street, Dep't. 'A' **San Francisco, California**

WANTED
Chief Structural Engineer
WITH
OIL FIELD MAST EXPERIENCE

Only top flight men need apply

A CAREER—NOT A JOB

All replies held strictly confidential. For interview write a letter, summarizing qualifications, to:

The HYDRA-LINE Division
of
JOHNSTON ENTERPRISES
Attn: G. W. Sinclair

Box 112 **Longview, Texas**

HELP WANTED

RESERVOIR ENGINEER: Independent production corporation operating in Mid-Continent area has an attractive position opening in Tulsa for an experienced reservoir engineer, must be Petroleum Engineering graduate with several years' experience in material balance studies, including repressuring and cycling operations. Good salary and excellent opportunity. Write: Box C-602, The Oil and Gas Journal, Tulsa, Oklahoma.

POSITION available as head of crude oil procurement and production department of independent company with two refineries in mid-west. Must have knowledge of production in Mid-Continent, Arkansas or Louisiana fields. Give complete personal and business history in reply. Box C-615, The Oil and Gas Journal, Tulsa, Oklahoma.

SALES ENGINEER

Graduate chemical engineer experienced in oil refinery or gasoline plant operations and engineering, to assist in marketing new and outstanding fractionating device.

DRAFTSMEN

General refinery drafting and design of pressure vessels, piping, etc. Please give education and experience. Replies confidential.

KOCH ENGINEERING CO., INC.
305 West Lewis Street
Wichita 2, Kansas

FOREIGN EMPLOYMENT
In
SAUDI ARABIA
For
QUALIFIED

GEOLOGISTS

Surface Mapping
Sub-Surface
Economic

SENIOR PALEONTOLOGIST

ENGINEERS

Triangulation Party Chief
Leveling Party Chief

SURVEYORS

Triangulation
Recorder-Triangulation
Precise Leveling

Career employment opportunities. Board and Room furnished. Vacation in U.S. with salary end of each 24-month period. Benefit plans.

If interested, apply by letter giving complete employment and personal history.

ARABIAN AMERICAN OIL COMPANY
200 Bush Street Dept. 'A'
San Francisco, California

HELP WANTED

GEOLOGICAL DRAFTSMAN—Independent company has position open in Tulsa for a map draftsman—preferably young married man. Personal data, record of experience, references and expected salary should be included in application. Write Box C-607, The Oil and Gas Journal, Tulsa, Oklahoma.

PETROLEUM GEOLOGIST — Aggressive, independent company has position available in Tulsa for graduate geologist experienced in Mid-Continent area and qualified to handle property reserve estimates. Letter of application should include personal facts, complete experience record, references and salary expected. Address Box C-606, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: SECURITIES SALESMAN
for new Oil and Gas Company. Apply by letter to Box 539, Alamosa, Colorado.

THE Carter Oil Company is seeking a graduate Engineer with extensive experience in petroleum production, for assignment to a responsible senior engineering position. An adequate salary is provided for this position and there are excellent opportunities for advancement. In addition there are liberal Company benefit and vacation plans. Please include statement of experience when writing to The Carter Oil Company, Box 801, Tulsa, Oklahoma.

REFINERY SUPERINTENDENT

Wanted by expanding independent company to take complete charge of operation of 3000 B. P. D. Midwestern refinery. Excellent opportunity for qualified man. In reply, state experience, education, and salary expected. Write, Personnel manager, Northwestern Refining Co., St. Paul, Minn.

EXPERIENCED PLANETABLE ENGINEER

Preferably 30 to 35 years of age. Personal interview desired.

LAUGHLIN-SIMMONS & CO.
615 Oklahoma Bldg., Tulsa 3, Oklahoma
Phone 3-5985

United Geophysical Company, Inc.
595 East Colorado Street
Pasadena 1, California

offers employment to experienced Gravity and Seismic

Party Chiefs

Seismologists

Computers

Observers

in both North and South America and the Middle East

ENGINEERING

During the next several months we will increase our Engineering Organization engaged in the design of Oil Refinery Plants and Power Plants. Location Cleveland, Ohio. The men we need should be qualified as draftsmen, designers, checkers or in higher engineering skills on design of piping, instrumentation, pressure vessels, structural steel, concrete, mechanical or electrical. For presenting your qualifications and prompt consideration, write to us for application form.

ARTHUR G. McKEE & CO.
2300 Chester Ave., Cleveland 1, Ohio

SITUATIONS WANTED

INDEPENDENT Geologist, Surface and Subsurface, would like to make connection with Independent oil company operating in Rocky Mnt. or Mid-Continent area. Box C-594, The Oil and Gas Journal, Tulsa, Oklahoma.

GEOLOGIST: Licensed Civil Engineer, 42, desires work performing geologic exploration, prospecting and scouting for oil in Nevada and adjoining areas. Box C-593, The Oil and Gas Journal, Tulsa, Oklahoma.

ATTENTION AGGRESSIVE growing organizations! Available November-December —38 years old—2 years college; 2 years drilling production; 4 years scout landwork and assistant to secretary treasurer, independent company; 4 years acidizing; 4 years major supply company; 3 years Army; 2½ years scout landman, 1 year crude purchasing. Former employer references. Box C-600, The Oil and Gas Journal, Tulsa, Oklahoma.

CHEMIST—Graduate Texas University—M.A. (Organic). Age 25, single, go anywhere —domestic or foreign. Draft exempt. Randolph, Box 351, Mexia, Texas.

GRADUATE PETROLEUM ENGINEER
Now employed as executive assistant with large producing company. Experienced in technical administrative work. Age 33. Desires position with established oil company or equipment concern. Prefers east or mid-west. Box C-604, The Oil and Gas Journal, Tulsa, Oklahoma.

PETROLEUM ENGINEER, 26, single, University of Oklahoma grad with 2 years' experience in refinery piping and mechanical design. Seeks position as sales engineer with refinery equipment manufacturer. Box "C," The Oil and Gas Journal, 415 Lexington Ave., New York 17, New York.

PETROLEUM Geologist—Experienced in exploration, exploitation, and administration, desires connection in Rocky Mountain Area. Will also consider part time retainer. Box C-616, The Oil and Gas Journal, Tulsa, Oklahoma.

COMMERCIAL PILOT—Single and Multi-Engine Land with Flight Instructor and Instrument ratings. Over 3,000 accident free hours. Age 26, of genius intelligence, and good educational and business background. Desire position with individual or company, domestic or foreign. Will work on retainer fee basis. Jack Brazil, 1109 North Dewey, Oklahoma City, Okla.

REAL ESTATE

MOVING TO HOUSTON?
Warehouse and Office Building on Supply House Row; Lease—$150/Month. J. N. Yeager, 602 Citizens State Bank, Houston 2, Texas.

FOR SALE

TRUCK LETTERING AND TRADEMARK DECALS made for your trucks and equipment. Easy to apply, uniform, distinctive, economical for small or large needs. Write for catalog. MATHEWS COMPANY, 827 S. Harvey, Oak Park, Illinois.

LEGAL BLANKS

BURKHART LEGAL BLANKS since 1908. Oil-Gas (all states), Business, Real Estate, Legal Forms, Leases, Revised With Government Regulations, Commercial Printing, Catalog and Samples on request. Burkhart Printing & Stationery Company, 115 South Cincinnati, Tulsa 3, Oklahoma.

FOR RENT

FOR RENT: Two offices exceptionally well furnished; with services of experienced Oil Secretary. Miss Pollock, 1602 Commerce Building, Houston, Texas, Preston 1174.

PUMPING SERVICES

TO OWNERS OF NON PAYING WELLS
We own the patents granted and pending on a Hydraulic pumping unit which sits directly over an oil or gas well. We will contract with owners on a royalty basis, install our unit over wells which are too expensive to pump by any other method or wells which pay no dividends, and we will guarantee satisfactory profits. Address: Trulift Pumping and Drilling Unit Corp., Calvin W. White, Inventor and President, 2707 Forest Ave., Kansas City, Missouri.

ROYALTIES

DEEDED ROYALTIES
San Juan Basin & Permian Basin. Write Harry S. Wright, Wright Bldg., Farmington, New Mexico.

WE will buy producing or non-producing oil royalties. Send particulars. Standard Security Company, 115 Broadway, New York 6.

PATENT ATTORNEYS

PATENT Practice before U. S. Patent Office. Validity and Infringement Investigations and Opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 418, 815-15th Street, N.W., Washington 5, D. C.

BUSINESS OPPORTUNITIES

FOR SALE: Fully equipped Oil Field Machine Shop. Two portable welding trucks. Good location, good business. Priced to sell. S.R.S Machine and Supply Company, Box 824, Thermopolis, Wyoming.

LEASE AND DRILLING BLOCKS

WE NEED LEASES and Drilling Deals in Eastern Oklahoma and Kansas. Give full particulars by mail. Rotary Drilling Corp., 921 World Bldg., Tulsa, Oklahoma.

FOR SALE: New Mexico, 28 N. 7W. 1136 acres Oil & Gas Lease; no rent to pay 3 years. Major companies drilling immediate vicinity. $5 acre plus override. Owner, Box 693, Santa Fe, N. M.

HAVE 1680 acre Oil and Gas Lease Stephens County, Texas. Flowing offset production. Subsurface geology by very reputable geologist. Want development. Will deal with principals only. No brokers. JESSE McKEE & SON, EASTLAND, TEXAS.

LEASE AND DRILLING BLOCKS

320-ACRE LEASE, with one well completed 2 years ago to 3400 feet. 7 barrels daily production. 38 gravity 220 ft. pay K.C. Lime. Long life, no water. Other K. C. zones not perforated. Equipment 2 yrs. old consisting of 15# 5½" SS Casing, 2" EUE SS Tubing, ¾" rods 10 h.p. Westinghouse motor, Ideco Unit. 2-200 bbl. wood tanks, wood G.B., 3" lead and flow lines. C. ERNEST LIGGETT, Drawer 631, Russell, Kansas.

RARE Opportunity, Greenwood County, Kansas. Bartlesville sand Seeley area. Two proven leases with full information. One of these leases already under flood. You can make your own deal on fair basis. Box C-598, The Oil and Gas Journal, Tulsa, Oklahoma.

WILL SELL for excellent price Carried Working Interest, almost equivalent of Royalty, in RANGELY, COLORADO, FIELD, paying approximately $10,200 monthly. Large reserve, no call on oil. This is not a sacrifice but a sound investment. Pricipals only, please. Box C-601, The Oil and Gas Journal, Tulsa, Oklahoma.

LEASES ROYALTIES
PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma. Louisiana and Illinois.
Inquiries Invited
B. D. BUCKLEY
60 Broadview Drive, Clayton (5), St. Louis, Missouri

Equipment Men

(Continued from page 148)

Mud Products Adds Engineers

Mud Products, Inc., Tulsa, distributors of mud equipment, drilling muds and chemicals have added two new sales engineers to cover Oklahoma and West Texas areas, according to E. R. "Dick" Albert, general manager.

Stewart W. Wortley, former assistant superintendent with Otis Pressure Control Co. and safety engineer for Traders & General Casualty Co. in West Texas, will be the sales and engineering representative in the West Texas area with headquarters in Midland.

Happy H. Miles will be the sales and engineering representative in the Oklahoma territory with headquarters at Mud Products main office in Tulsa.

Miles was formerly associated with Anchor Petroleum Co. and Southern Gas Equipment Co.

Oil Well Promotes Swanson

Promotion of O. C. Swanson, manager of Oil Well Supply Co.'s Mt. Carmel, Ill., store, to field salesman in the company's Illinois district has been announced by C. H. Maynard, Eastern division manager for Oil Well Supply. He is succeeded by David E. McCarthy.

Swanson, who joined Oilwell in September 1940, was located at stores in Centralia, Ill., Mt. Carmel, and Charleston, W. Va. In June 1944, he was named manager at Mt. Carmel.

McCarthy, a veteran of World War II, became connected with Oil Well Supply Co. in February 1937 at the company's Imperial Works at Oil City.

Emsco to Distribute Page Oil Tools

Wm. C. Kinder, vice president and manager of the D+B Division of Emsco Derrick & Equipment Co., has signed a contract with John S. Page, inventor of the Page tension-type production equipment and president of Page Oil Tools, Inc., wherein the D+B Division acquires the exclusive distribution of Page tools in all fields of the United States, with the exception of the Pacific Coast states.

The Page equipment will be stocked in D+B stores and Continental Supply Co. stores. These products will be sold and serviced in a manner identical to all D+B production equipment.

Baker Opens Warehouse

Baker Oil Tools, Inc., recently opened a branch warehouse in Lake Charles, La., in the Corman Warehouse, Inc., building, Army Air Base. W. C. Wilson and H. E. Lyle have been transferred from Baker's Beaumont base to the new quarters.

WECO Appoints Representatives

Roy Shields, former Well Equipment Manufacturing Corp. special service representative, has been promoted to sales representative, and J. C. McCelvey and Bill Chilcutt added to the sales organization, G. R. Winder, vice president and sales manager, announced.

In his new assignment, Shields covers southeast Louisiana and Mississippi and headquarters in Baton Rouge.

McCelvey, former assistant foreman, assumes the duties of special service representative, formerly held by Shields.

Chilcutt, a former Bovaird Supply Co. store salesman, has joined the Weco sales organization as junior salesman under a new training program which is designed to eventually double the present sales and service organization. He is stationed in Oklahoma City, under A. S. Bright, sales representative for Oklahoma and Kansas.

Bethlehem Supply Announces Promotions

Bethlehem Supply Co. announces the promotion and transfer of several field personnel.

J. Kelly Davis, formerly district engineering representative in Louisiana Gulf district, has been promoted to assistant district manager of the same district, W. B. House, formerly store manager and field representative at Shreveport, has been transferred in the same capacity to the Odessa, Tex., store. Bill Pickering, formerly store manager and field representative at Winnsboro, Tex., has been transferred in the same capacity to the Shreveport store. W. Q. Mitchell, formerly store manager and field representative at Carthage, Tex., and more recently field representative out of Shreveport, has been promoted to store manager and field representative at Winnsboro.

Farrel-Birmingham Appoints Export Manager

Farrel - Birmingham Co., Inc., of Ansonia and Derby, Conn., and Buffalo, announces the appointment of Carl F. ter Weele as export manager. He will make his headquarters at the company's New York office, 3700 Chrysler Building.

New Branch at Plainville

C & W Machine Works, Great Bend, Kans., owned jointly by Floyd A. Cailloux and R. E. (Bob) Craine, has announced the opening of a new branch at Plainville, Kans. The new Plainville branch will be equipped to handle any and all types of oilfield repairs.

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CALENDAR

October

American Society of Mechanical Engineers, petroleum division, Herring Hotel, Amarillo, Tex., October 3-6.

American Association of Petroleum Geologists, midyear meeting, technical session and 3-day field trip, William Penn Hotel, Pittsburgh, Pa., October 4-9.

American Institute of Mining & Metallurgical Engineers, petroleum division, fall meeting, Adolphus Hotel, Dallas, October 4-6.

American Gas Association, thirtieth annual convention, technical section, and exhibition of the Gas Appliance Manufacturers Association, Ambassador Hotel, Atlantic City, N. J., October 4-8.

California Natural Gasoline Association, twenty-fourth annual fall meeting, Ambassador Hotel, Los Angeles, Calif., October 8.

National Lubricating Grease Institute, sixteenth annual convention, Edgewater Beach Hotel, Chicago, October 11-13.

American Association of Oilwell Drilling Contractors, eighth annual meeting, Rice Hotel, Houston, October 11-13.

Mid-Continent Pipe Line Chapter of Associated General Contractors of America, special membership meeting, Mayo Hotel, Tulsa, October 12-13.

National Industrial Chemical Conference, Coliseum, Chicago, October 12-16.

American Institute of Chemical Engineers, annual Oklahoma state meeting, Mayo Hotel, Tulsa, October 16.

Texas Mid-Continent Oil and Gas Association, twenty-ninth annual meeting, Fort Worth, October 14-15.

Natural Gasoline Association of America, southern regional meeting, Washington-Youree Hotel, Shreveport, La., October 15.

American Institute of Mining and Metallurgical Engineers, petroleum division, Elks Club, Los Angeles, Calif., October 14-15.

American Institute of Chemical Engineers, Oklahoma annual meeting, Tulsa, October 16.

Fifteenth annual meeting and field trip, South Texas Section, American Association of Petroleum Geologists, Mexico City, October 18-23.

Southern California Meter Association, monthly meeting, Rio Hondo Country Club, Los Angeles, October 21.

Mid-Continent Oil & Gas Association, Louisiana-Arkansas Division, annual membership meeting, Roosevelt Hotel, New Orleans, October 21-22.

American Institute of Mining and Metallurgical Engineers, annual regional meeting, El Paso, October 24-27.

Measurement and Control Instrument Exposition, sponsored by the Southern California Meter Association, Municipal Auditorium, Long Beach, Calif., October 22-23.

Independent Natural Gas Association of America, annual meeting, Mayo Hotel, Tulsa, October 26.

Third annual short course on "Instrumentation for the Process Industries," Texas A. & M. College, College Station, Tex., October 26-28.

November

American Society of Mechanical Engineers, fuels division, Greenbrier Hotel, White Sulphur Springs, W. Va., November 3-4.

Society of Automotive Engineers, fuels and lubricants division, Mayo Hotel, Tulsa, November 4-5.

American Petroleum Institute, annual meeting, Stevens Hotel, Chicago, November 8-11.

Dallas Geological Society and Dallas Geophysical Society, joint regional exploration meeting, Adolphus Hotel, Dallas, November 18-19.

American Society of Mechanical Engineers, annual meeting, Hotels Pennsylvania and New Yorker, New York, November 28-December 3.

December

National Gasoline Association of America, regional meeting, Amarillo, Tex., December 3.

1949

January

Society of Automotive Engineers, annual meeting, Book-Cadillac Hotel, Detroit, Mich., January 10-14.

February

American Society for Testing Materials, spring meeting and A.S.T.M. committee week, Hotel Edgewater Beach, Chicago, Ill., February 28-March 4.

March

National Association of Corrosion Engineers, annual convention, Cincinnati, Ohio, March 7-10.

American Petroleum Institute, Southwestern district, Galvez Hotel, Galveston, Tex., March 9-11.

American Petroleum Institute, division of production, Mid-Continent district meeting, Mayo Hotel, Tulsa, March 23-25.

New England Gas Association, Hotel Statler, Boston, March 24-25.

Western Petroleum Refiners Association, thirty-seventh annual meeting, Plaza Hotel, San Antonio, Tex., March 28-30.

American Chemical Society, division of petroleum chemistry, spring meeting San Francisco, March 27-April 1.

April

American Society of Lubrication Engineers, annual meeting, Pennsylvania Hotel, New York, April 11-13.

National Association of Corrosion Engineers, Netherlands-Plaza Hotel, Cincinnati, Ohio, April 11-13.

Southwestern Gas Measurement Short Course, University of Oklahoma, College of Engineering, Norman, Okla., April 12-14.

National Petroleum Association, Hotel Cleveland, Cleveland, Ohio, April 13-15.

Natural Gasoline Association of America, annual meeting, Texas Hotel, Fort Worth, April 20-22.

Southern Gas Association, annual convention, Buena Vista Hotel, Biloxi, Miss., April 20-22.

American Petroleum Institute, Eastern district, William Penn Hotel, Pittsburgh, Pa., April 27-29.

May

Independent Petroleum Association of America, mid-year directors meeting, New Orleans, La., May 2-4.

American Gas Association, natural-gas department, spring meeting, French Lick Springs Hotel, French Lick, Ind., May 9-10.

NOMADS

Houston Nomads, second Monday of each month, The Houston Club, Houston.

Los Angeles Nomads, second Wednesday each month, Jonathan Club.

New York Nomads: Golf party, Sept. 21, at Balturrol Country Club, N. J.

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Interior view of a 14'3" x 110' fractionating tower showing installation of one of the stainless steel bubble trays to complete another superior fabrication by Wyatt's for the Petroleum Industry.

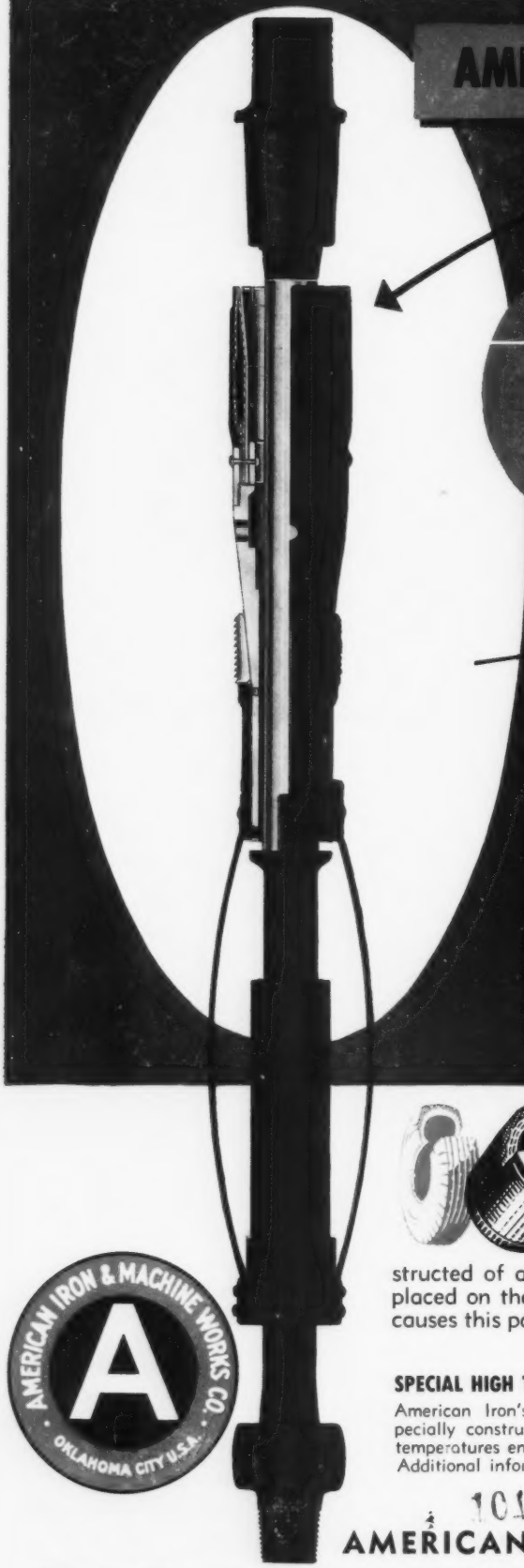
WYATT METAL & BOILER WORKS

STEEL PLATE DESIGNERS, FABRICATORS AND ERECTORS TO INDUSTRY'S SPECIFICATIONS

Wyatt's

HOUSTON - DALLAS

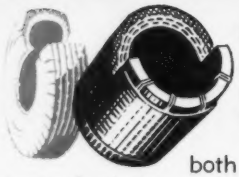
AMERICAN TYPE G PACKER



SEALS

WITHOUT CRUSHING THE CUP

Regardless of depth, pressure, or difficult completion conditions, this packer gives a positive seal . . . without crushing cup! Here's why! In above circle at left you see the cone descending into the packing element horizontally against the casing as the cone moves downward. In circle at right the cone has stopped in its final position. Note how, through the force of lateral expansion, the rubber has moved up (see white arrows) and now forms a complete, positive seal! The packing element is now expanded laterally — not compressed — an exclusive American Iron feature!



PACKING ELEMENT RETURNS TO ORIGINAL SHAPE

Our exclusive design of this packing element takes full advantage of modern tire fabrication principles. Sketches at left show the great similarity of cut-away portions of both cup and tire . . . show how both are constructed of alternating layers of rubber . . . with fabric cut and placed on the bias! It's this exclusive method of fabrication that causes this packing element to return to its original shape!

SPECIAL HIGH TEMPERATURE PACKING CUP . . .

American Iron's high temperature packing cup is especially constructed to help you combat the increasing temperatures encountered as wells go deeper and deeper. Additional information on request.

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AMERICAN IRON & MACHINE WORKS CO.

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